NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:
Upon Receipt
Release No. 75-1

MSFC ANALYZING DATA FOR TENNESSEE LAND USE STUDY

MARSHALL SPACE FLIGHT CENTER, Ala.--Infrared photography of West Tennessee wetlands from both a low-flying NASA aircraft and an Earth-orbiting satellite is being analyzed at the NASA-Marshall Space Flight Center (MSFC) for use by the Tennessee State Planning Office in determining proper land utilization of the area.

The wetlands area under study includes 16 counties in the western quarter of Tennessee which experience flooding at one time or another. Ten major streams in the area drain into the Mississippi River.

Extremely accurate mapping by means of infrared photography is possible since water reflects no infrared at all, while vegetation reflects very highly.

The West Tennessee Wetlands Project is one of a number of earth science research projects under cognizance of the Earth Resources Office of the Data Systems Laboratory at MSFC. Ted Paludan is chief of the office. Serving as Project Monitor for MSFC is Tom Escue of the Guidance and Control Instrumentation Division, Electronics and Control Laboratory.

-more-

Jan. 2, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:

Upon Receipt
75-4

ASTP ELECTRIC FURNACE DELIVERED TO KSC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The electric furnace to be used during the joint U. S. - Russian Apollo Soyuz Test Project (ASTP) mission next summer has been delivered to the NASA-Kennedy Space Center (KSC) and installed in the spacecraft docking module.

The furnace, known as the Multipurpose Electric Furnace System, was manufactured by the Westinghouse Corporation under direction of the NASA-Marshall Space Flight Center. NASA officials formally accepted the furnace at the contractor's plant in Pittsburgh, and the unit was then flown from there to KSC aboard a NASA aircraft.

The ASTP furnace will be used to perform experiments to demonstrate the feasibility of using the weightless space environment to investigate crystallization, convection and immiscibility processes for use in future materials processing applications in space, as well as applications of technology on Earth.

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January 10, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Joseph M. Jones, 205/453-0031
Residence, 205/852-4109

FOR RELEASE:
Immediately
75-6

MSFC REDUCTION IN FORCE DELAYED TWO WEEKS

MARSHALL SPACE FLIGHT CENTER, Ala. -- Marshall Space Flight Center officials have revised slightly the Center's plans for the fiscal year 1975 reduction-in-force, which was originally announced almost a year ago.

The target date for issuing notices to employees had been mid-January, with effective date the last of February. Today the Center announces notices will be given to employees January 29 and become effective March 14.

The two-week delay was caused primarily by an adjustment to the end of fiscal year 1975 personnel ceiling from 4,145 to 4,113, a decrease of 32. This further reduction in personnel is Marshall's portion of the total government-wide 40,000 employees cut called for last fall by President Ford. (The space agency was reduced by 300 persons, 32 of which were assessed against MSFC.)

Even with this new reduction of 32, the total number of separations will still probably be under 150, according to Manpower Office Director Howell Riggs. This is because of an unusually large attrition rate--mainly retirements at the end of the past calendar year.

NASA-MSFC

# # #

January 13, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
Upon Receipt
75-7

CONTRACT AWARDED FOR WORK ON ASTP ELECTROPHORESIS EXPERIMENT

MARSHALL SPACE FLIGHT CENTER, Ala. -- A $59,950 contract has been awarded to the Abbott Laboratories of Chicago by the NASA-Marshall Space Flight Center (MSFC) for scientific support services related to an electrophoresis technology experiment which will be performed by U. S. astronauts during the Apollo Soyuz Test Project (ASTP) next summer.

Electrophoresis, the separation of materials by means of an electric field, is an important tool in biological and medical research.

The electrophoresis experiment is one of eight ASTP materials processing experiments being managed by MSFC. The ASTP, a joint U. S. - U. S. S. R. mission planned for July, 1975, will be the first international manned space flight.

For the experiment, Abbott Laboratories will provide living, human kidney cells to be separated in the zero-gravity environment of space. Some kidney cells produce urokinase, an enzyme capable of dissolving blood clots which have already formed in the body.

-more-

January 13, 1975

Urokinase was originally extracted at the rate of one dose from 350 gallons of human urine. Later experiments showed that some kidney cells produce this urokinase and further that it could be harvested from kidney cell cultures.

The problem is in finding a way to effectively isolate the one kidney cell in 20 that produces the enzyme. Separations of all kinds have been attempted; however, gravity makes all cell separations difficult on Earth.

While only about five per cent of the cells in the kidney cells produce urokinase, scientists believe that if those cells can be isolated and grown in culture it may be possible to get many times the amount of urokinase now being extracted from mixed cell cultures.

Isolation of these specific cells will also aid scientists in optimizing the conditions necessary for urokinase production.

Coordinating scientist for Abbott Laboratories is Grant Barlow, considered an expert in the area of anti-thrombosis. MSFC's technical authority is Dr. Robert Allen, chief of the Bio-Technology Branch, Non-Metallic Materials Division, Materials and Processes Laboratory.

The ASTP experiment will be a further development of technology begun in the Apollo 14 and 16 missions and continued through the Skylab 4 mission.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
Upon Receipt
75-8

TEST UNIT FOR APOLLO SOYUZ EXPERIMENT ACCEPTED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Qualification Test Unit for the Electrophoresis Technology Experiment to be conducted during the Apollo Soyuz Test Project (ASTP) next summer has completed acceptance testing at the NASA-Marshall Space Flight Center (MSFC) and has been delivered to the NASA-Kennedy Space Center (KSC) for further tests.

The electrophoresis experiment, which concerns the separation of biological materials such as cells by means of an electric field, is one of eight ASTP materials processing experiments being managed by MSFC. The ASTP, a joint U. S. - U. S. S. R. mission planned for July, 1975, will be the first international manned space flight.

The Qualification Test Unit, which will serve as a backup for the Flight Unit, will undergo fit and function tests at KSC, and will also be used by astronauts in a manned altitude flight simulation scheduled for mid-January, 1975.

Both the Qualification Test Unit and the Flight Unit are manufactured by Teledyne Brown Engineering of Huntsville, Ala., under contract to MSFC.

# # #

January 14, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
Upon Receipt
75-9

CONSTRUCTION CONTRACT AWARDED FOR X-RAY TELESCOPE TEST FACILITY

MARSHALL SPACE FLIGHT CENTER, Ala. -- A contract for construction of an X-ray telescope test facility at the NASA-Marshall Space Flight Center for use in NASA's High Energy Astronomy Observatory (HEAO) program has been awarded to Inscho's Mechanical Contractors, Inc., of Birmingham, Ala.

The contract was in the amount of $2,253,300.

Work is expected to start this week, and the period of performance is 450 calendar days. Final acceptance is scheduled for April 1, 1976.

The facility will be used for X-ray verification testing and calibration of X-ray mirrors, telescope systems and instruments.

The HEAO project will include the launch of three unmanned scientific satellites into low circular Earth orbit between 1977 and 1979 to study some of the most intriguing mysteries of the universe--black holes, neutron stars, quasars and supernovae. The program is being managed for NASA's Office of Space Science by the Marshall Center.

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January 14, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

FOR RELEASE:

Mike Sarr, 205/453-0035
Residence, 205/883-8998

Upon Receipt
Release No. 75-10

DR. EVERETT COOK COMPLETES RESEARCH AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. --Determining methods to analyze structures made of composite materials was the subject of research conducted by Dr. Everett Cook, a research associate in the Structures and Propulsion Laboratory.

Dr. Cook, an associate professor in aeronautical engineering at Wichita State University in Kansas, came to the Marshall Center in 1974 under the research associate program of the National Research Council and NASA.

The materials considered in his research are composed of thin layers of fibers and epoxy, an adhesive resistant to chemicals. The fibers, which are made of graphite, boron or aluminum, are layered alternately with the epoxy. The intended use of the material determines the angle at which the fibers are placed.

-more-

January 16, 1975

The cost of the material has kept it from being used widely, although it is being used to some degree in the field of aeronautics. Dr. Cook expressed the belief that these materials will be prominent in the future as soon as more is known about their performance. This material has already been used in some high-performance aircraft because of its strength, durability and light weight. There is the possibility that some of this material could be used on parts of the Large Space Telescope, he said.

The graphite shafts used in golf clubs are made of a fiberous material based on the same idea. Also, it is conceivable that this material could be used in the manufacture of pre-fabricated housing.

Born in Mounds, Okla., Dr. Cook received his Bachelor of Science and Masters degrees in aeronautical engineering from Wichita State University and his doctorate in mechanical engineering from Oklahoma State University.

Upon leaving the Marshall Center, Dr. Cook plans to return to Wichita State to continue teaching.

Dr. Cook is one of a number of researchers presently working at the Marshall Center under associateships awarded by the National Research Council in its program of providing an opportunity for continuing research in a field that is mutually beneficial to the individual, the National Research Council and NASA.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0035
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 75-11

RFP ISSUED FOR SPACE SHUTTLE INTEGRATED ELECTRONIC ASSEMBLIES

MARSHALL SPACE FLIGHT CENTER, Ala.,--A request for proposals (RFP) has been issued by the NASA-Marshall Space Flight Center for Integrated Electronic Assemblies (IEA) for the Solid Rocket Boosters (SRB) of the Space Shuttle.

Proposals, due at MSFC Feb. 12, 1975, will be for design, development, test and evaluation and for fabrication and assembly of IEAs and associated test equipment for the first six Shuttle flights.

Each SRB will have two IEAs, one forward and one aft. The initial contract will call for 33 units, which includes flight articles, spares and development and test versions. The contract will be a cost-plus-incentive-fee/award-fee type agreement.

The aft IEA interfaces with the Shuttle Orbiter, the forward IEA and other avionic systems. Ignition commands are routed from the Orbiter through the aft IEA to the forward IEA.

-more-

Jan. 17, 1975

During launch, the aft IEA routes commands from the Orbiter to control the thrust vector control system.

The forward IEA initiates the release of the nose cap and frustum, jettison of the solid rocket motor nozzle, detachment of the parachutes and turn-on of the recovery aids. The SRBs are designed for recovery, refurbishment and reuse.

Deliveries of IEAs are scheduled to begin in 1976 and continue through April 1, 1979. Three test sets are to be delivered, the last on Aug. 15, 1977.

The Space Shuttle will be a reusable space transportation system consisting of the Orbiter, the External Tank (ET) and two SRBs. The Shuttle is designed for multiple reuse with the ET being the only major item expendable on each mission.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
Release No. 75-12

MODIFICATIONS CONTINUE AT MICHOUD ASSEMBLY FACILITY

MARSHALL SPACE FLIGHT CENTER, Ala. -- The capability to produce External Tanks (ET) for the Space Shuttle moves nearer as modifications of and additions to the NASA-Michoud Assembly Facility at New Orleans progress.

Two projects are in the final construction phase, a third will be completed this fall, and contracts for two more have been awarded. Five other projects are in the design phase.

Nearing completion are tank weld subassembly and mechanical subassembly facilities. Components of the liquid oxygen and liquid hydrogen tanks are to be welded in the first facility and mechanical components assembled in the latter.

In progress now are extensive modifications to the cranes and trusses in the main plant. Cranes were removed for rework and modification. The reworked cranes will be reinstalled and new ones added. The trusses are being strengthened to take care of the additional crane load. This work is scheduled for completion in October.

Work on providing an area for welding the propellant tanks is due to begin this month.

-more-

January 20, 1975

A contract is expected to be awarded next month to construct a pneumatic test facility. This facility will be used for pneumatic (pressurized nitrogen) tests of the liquid hydrogen tanks. These tests are required to verify all welded joints for the hydrogen tanks.

Still in the design phase are modifications of an area in the main plant for preparing and applying materials for the Shuttle's thermal protection system.

Also still in the design phase are extensive modifications to the Vertical Assembly Building to provide: A hydrostatic (water under pressure) test position for the liquid oxygen tanks; three positions for the application of thermal protection material; a tank cleaning position; and a stacking and joining position for the propellant tanks.

A number of small tasks are also either underway or scheduled to be completed this year, such as foundations for tooling fixtures, modifications to a major tank component cleaning area, minor modifications to the plant and rehabilitation of the chemical waste well.

# # #

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No. 75-13

GERMAN ELECTROPHORESIS EXPERIMENT TEST UNIT FOR ASTP DELIVERED

MARSHALL SPACE FLIGHT CENTER, Ala.--The Qualification Test Unit for the German Electrophoresis Experiment to be performed during the Apollo Soyuz Test Project (ASTP) this summer has been delivered to the NASA-Kennedy Space Center (KSC).

The Flight Unit is scheduled for delivery Jan. 27. 1975

The purpose of the German Electrophoresis Experiment, designated as MA-014, is to investigate the possibilities of improved performance of the free-flow electrophoresis process in the absence of gravity. Electrophoresis, the separation of charged particles such as biological cells by means of an electric field, is an important tool in biological and medical research.

The ASTP, a joint U. S.-U.S.S.R. mission planned for July, 1975, will be the first international space flight.

Both the Qualification Test Unit and the Flight Unit were developed, built and tested by the West German contractor, Messerschmidt-Bolkow-Blohm, for the German government.

-more-

Jan. 20, 1975

The NASA-Marshall Space Flight Center (MSFC) acts in an advisory and coordinating role with the contractor and the West German government for the Electrophoresis Experiment.

The Qualification Test Unit has been placed in the manned altitude chamber at KSC for the first in a series of pre-launch tests. The unit, after some refurbishment, will be stored at KSC as a flight back-up item.

The Flight Unit will be installed in the Apollo Command Module in mid-February for a high-gain antenna test series and will remain at KSC until the ASTP launch date.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

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FOR RELEASE:
Upon Receipt
75-14

SUNFALL MONITOR TO PROVIDE DATA FOR EFFICIENT SOLAR ENERGY CONVERTERS

MARSHALL SPACE FLIGHT CENTER, Ala. -- An instrument to measure and record the amount of energy available from the Sun is being designed and developed by the IBM Corp., Federal Systems Div., Huntsville, for the NASA-Marshall Space Flight Center (MSFC).

To be used initially in MSFC's feasibility studies of Earth-based solar power conversion systems, a prototype of the Sunfall Monitor System will be built by IBM under a $74,247 contract, with delivery in July, 1975.

The system will provide data for design and development of solar energy conversion equipment by monitoring the amount of solar energy available and by providing data on the absorptive qualities of various collector materials. It will be capable of monitoring both direct and diffuse solar energy, with tracking as well as non-tracking capabilities.

Designed to be located and operated in remote areas, with internal environmental control for any climate between -40 and +125 degrees Fahrenheit, the system will store data on magnetic tape for up to 30 days in computer-ready format.

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The Sunfall Monitor prototype will be used at the Marshall Center in conjunction with solar concentrator subsystems testing to determine the amount of direct solar radiation available and how efficiently the subsystem collects the available energy.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:

Upon Receipt
Release No. 75-15

NASA, INTERIOR DEPARTMENT TEAM UP ON ENERGY FUELS RESEARCH

MARSHALL SPACE FLIGHT CENTER, Ala. -- An interagency agreement between the Interior Department and the National Aeronautics and Space Administration (NASA) will lay the groundwork for applying NASA capabilities to problems of mineral extraction, Secretary of the Interior Rogers C. B. Morton announced today.

"The new agreement for a cooperative research and development effort on mineral extraction problems will concentrate on development of coal mining technology that could be demonstrated in the mid-1980's," Jack W. Carlson, Assistant Secretary of Interior for Energy and Minerals said.

Under terms of the agreement, evolving national problems in energy and mineral extraction can now be tackled with advanced technology in many areas. According to Dr. Carlson, "Some of the knowhow that put man in space may enable coal -- America's most abundant energy resource -- to supply a larger share of the country's energy needs without harming miners or the environment."

-more-

January 20, 1975

This effort will take particular advantage of NASA experience in the development of systems for manned and automated operation in hostile environments. It will also draw on aerospace technology in such fields as automation, remote control operations, systems integration techniques, computerized systems simulation, environmental control, safety, combustion, large equipment operation, and procedural analysis.

The Interior Department will provide overall direction for the program and NASA will manage the combined efforts of its own scientists and contracted support from industry. Interior will provide the funding to defray costs incurred by NASA in accomplishing program goals and objectives.

The Marshall Space Flight Center, Huntsville, Ala., has been designated as the lead NASA Center.

NASA is already cooperating with Interior's Office of Coal Research, which is scheduled to become a part of the Energy Research and Development Administration, to develop advanced stationary power systems which will burn either coal or coal-derived fuels. Of primary import to future national energy conversion R&D programs is a study being conducted by NASA for the Office of Coal Research and the National Science Foundation, to assess the development of a wide spectrum of new power systems that depend on coal or coal-derived fuels. Funding for contractual assistance to NASA in the conduct of these studies is being provided by the Interior Department and NSF.

Further cooperative efforts with NASA involving advanced research and technology for coal utilization in power systems are also being studied.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:
Upon receipt.

Release no. 75-16

PROPOSALS SOUGHT ON AUXILIARY PAYLOAD POWER SYSTEM FOR SHUTTLE

MARSHALL SPACE FLIGHT CENTER, Ala.--A Request for Proposals (RFP) for a design feasibility study of an Auxiliary Payload Power System (APPS) for Space Processing Applications (SPA) experiments aboard the Space Shuttle has been issued by the NASA-Marshall Space Flight Center. Proposals are due by Jan. 27, 1975.

The purpose of the 10-month study is to develop an optimized design concept for an APPS to be used with Shuttle Space Processing payloads. The APPS is envisioned as a unit carried in the Shuttle cargo bay which can be used to augment the Spacelab electrical power/thermal rejection capability during the performance of Space Processing experiments which have uniquely high power requirements. It can also be used to support SPA experiments on missions of opportunity, such as satellite deployment.

The objective of the SPA program is to accommodate research on materials and processes in space in order to improve materials processing on Earth and ultimately to produce products in space that cannot be produced on Earth.

-more-

The results of the SPA experiments aboard the Skylab have tended to confirm that the weightlessness of space has some unique effects on key phenomena, such as diffusion, and on key industrial processes, such as crystal growth. Also, ground-based research has identified a number of other products and processes that will be affected significantly by weightlessness.

A thorough investigation of these effects will require an intensive series of space experiments. Considering the number of processes and products that must be investigated, a large number of frequent space flight opportunities will be required.

The frequency and economy of flight opportunities provided by the Space Shuttle/Spacelab mode of operation affords the means of conducting this type of research program.

Space processing experiments require high power and thermal dissipation capabilities which are unique when compared with other Space Shuttle/Spacelab payloads. Also, these requirements will grow as SPA experiments move beyond the basic research phase into more ambitious endeavors and as the program approaches actual manufacturing operations. Thus, APPS was conceived for providing the power and thermal dissipation requirements unique to SPA payloads.

Spacelab will be flown both with and without a pressurized module with various pallet configurations for supporting payloads in the Shuttle cargo bay.

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Many of the Shuttle missions will consist of multi-discipline shared payloads in which SPA payloads must be flown on a space-available basis.

APPS will provide the housing and support of automated SPA payloads which are flown in the cargo bay on missions in which the pressurized module is not flown or on shared missions in which space is unavailable in the module for SPA payloads.

APPS will also provide a means of supporting automated experiments which by virtue of their process characteristics should not be housed in the Spacelab module because of safety considerations.

Thus, APPS will greatly enhance the Space Processing Program's ability to gain access to frequent flight opportunities and subsequently increase productivity, which is inherently required in a research program of this nature.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:
Upon Receipt
Release No. 75-17

DR. HANNES ALFVEN, NOBEL LEAUREATE, TO LECTURE AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- A Nobel laureate and professor at the Royal Institute of Technology, Sweden, will be the speaker at the NASA-Marshall Space Flight Center (MSFC) Space Science Seminar Thursday, Jan. 30.

Dr. Hannes Alfven, who received the Nobel Prize in physics for 1970 for his work in the physics of plasma and hot electrified gases, will lecture on the subject "Space Research and the Evolution of the Solar System." The lecture will begin at 10 a. m. in the Morris Auditorium, MSFC headquarters building.

A native of Sweden, Dr. Alfven received his doctorate from the University of Uppsala. He has worked for more than 40 years in the field of hydromagnetics and plasma physics as they apply to cosmic physics. He discovered a special stable wave form in plasma that has been named the Alfven Wave.

Dr. Alfven served the Swedish Royal Academy of Technology as a professor of electronics and of plasma physics from 1964 to 1973.

-more-

January 24, 1975

Honors awarded to Dr. Alfven include the Gold Medal from Great Britan's Royal Astronomical Society and the Lomonosov Gold Medal, the highest award given by the USSR Academy of Sciences.

Dr. Alfven's publications include numerous papers in physics and astrophysics. His book, "Cosmical Electrodynamics," appeared in 1950. The latest of his more recent books is "Living on the Third Planet," 1972, under the pen name of Olaf Johanneson, co-authored with Kerstin Alfven.

The general public is invited. The lecture will end with a session in which Dr. Alfven will answer questions from the audience.

This lecture will be Dr. Alfven's second appearance at the Marshall Center for a Space Science Seminar. His first visit here was on Sept. 16, 1970, when he lectured on the "Origin of the Solar System."

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:
Upon Receipt
Release No. 75-18

MSFC's DECEMBER CONTRACTS LISTED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center during December awarded the following contracts of $25,000 or more:

ALABAMA

Birmingham -- Ingalls Iron Works Co., $89,186 for 14 items of carbon steel; Inscho's Mechanical Contractors, Inc., $2,253,300 for construction of the X-Ray Telescope Facility, building 4708 at the Marshall Center; and O'Neal Steel, Inc., $146,827 for 23 items of carbon steel.

Fairfield -- United States Steel Corp., (two contracts), $49,425 for six items of carbon steel and $30,059 for four items of carbon steel.

Huntsville -- Brown Engineering Co., Inc., $535,000, incremental funding through Jan. 31 for engineering support services in the Science and Engineering directorate; Computer Sciences Corp., $94,678, incremental funding for computation support services; Digital Equipment Corp., $25,200 for maintenance of government-owned Digital Equipment Corp. automatic data processing equipment.

-more-

January 24, 1975

Hayes International Corp., $1,832,506, extending the period of performance and increasing funds for general support services to the MSFC Management Services Office; IBM (two contracts), $103,560, incremental funding and extending the period of performance for the Apollo Telescope Mount digital computer and $138,860, for maintenance of government-owned IBM automatic data processing equipment.

Lockheed Missiles and Space Co., $40,000 to expand the scope of work and extend the period of performance for the Study of the Effects of Atmospheric Turbulence on Laser Communication Systems; Management Services, Inc., (two contracts), $156,880 to increase manhours and costs and incremental funding for general support services, and $104,261, incremental funding for general support services; M&S Computing, Inc., $83,234 for the design, development, installation and certification of an automated acquisition, analysis display and control system; Northrop Services, Inc., $106,000, incremental funding through Dec. 31 for mission support services for the Science and Engineering directorate.

Planning Research Corp. (two contracts), $43,000 and $135,000, incremental funding for engineering support services; Sperry Rand Corp., $288,000, incremental funding for engineering support services for the Science and Engineering directorate; and U. S. Army Engineering Division, $270,000, additional funds for the modification of the S-IC Test Stand for the External Tank Structural Test Facility.

ARIZONA

Tuscon -- University of Arizona, $49,972, to amend the scope of work and extend the period of performance for the study of the role of gravity in preparative electrophoresis.

CALIFORNIA

Anaheim -- Ling Electronics, Division of Altec Corp., $72,509 (est.), for the repair/maintenance of government-owned Ling Electronic equipment and MB Electronics equipment.

Canoga Park -- Quelex Data Systems, $49,100, three items of simulation components with installation and checkout; Rockwell International Corp., Rocketdyne Division (three contracts), $88,000 to amend the scope of work to include the rehabilitation of the Santa Susana Field Laboratory water system and air conditioning units in support of the Space Shuttle, $29,542 to amend the scope of work for the low-speed inducers for the cryogenic upper-stage engines of the Space Tug, and $26,760 to amend the scope of work to include the replacement of electronic controls of five government-owned electron beam welders in support of the Shuttle.

Hawthorne -- Northrop Corp., ($28,737), a decrease in funds and to amend the scope of work for Apollo Soyuz Test Project (ASTP), Experiment MA-044.

Huntington Beach -- McDonnell Douglas Corp., $1,715,085, incremental funding through Feb. 23 for the S-IVB stage in support of the Apollo Soyuz Test Project.

La Jolla -- University of California, $350,000, incremental funding through March 15 for the AGR 4 MEV range gamma ray telescope experiment for HEAO (High Energy Astronomy Observatory).

Mountain View -- DCA Reliability Laboratory, Inc., $30,270 to increase the contract value and the quantity of diodes and transistors for HEAO.

Pasadena -- California Institute of Technology, $25,000, incremental funding through July 15 for the ACR-7 Heavy Nuclei Experiment for HEAO.

Redondo Beach -- TRW, Inc., $8,367,000, incremental funding through March 31 for two High Energy Astronomy Observatories; and TRW Systems Group, $85,000, for an AMPS (Atmospheric, Magnetospheric and Plasmas in Space, a proposed payload of the Space Shuttle) data management requirements study.

Stanford -- Stanford University, $360,000 for the performance of a gyro test of general relativity in a satellite.

Sunnyvale -- DACOM, Inc., ($26,073), a reduction of funds and a discontinuance of the rental of equipment on Feb. 28, in lieu of June 30, 1975; Lockheed Aircraft Corp., $695,000 for a Large Space Telescope (LST) Support System Module (SSM) definition study.

COLORADO

Boulder -- Ball Brothers Research Corp. (two contracts), $27,472 for additional work and to extend the period of performance for Helium Dewar Technology Studies for the Stanford Relativity Experiment, and $112,000, incremental funding through July 15 for hardware development for the ACR-7 experiment for HEAO Mission A.

Denver -- Martin Marietta Corp., $49,032 to expand the scope of work and extend the period of performance for the Payload Orbiter Contamination Control Requirements Study, and $687,201 for a Large Space Telescope (LST) Support System Module (SSM) definition study.

LOUISIANA

New Orleans -- Martin Marietta Corp. (four contracts), $325,000, additional funds for the weld assembly, Phase II, in support of the External Tank of the Space Shuttle, $78,000, additional funds for site investigation in support of the External Tank, $351,000, additional funds for contractor acquired property, rehabilitation, rearrangement and alteration of facilities, and $1,000,000 incremental funding and extension of letter contract through Jan. 31.

MASSACHUSETTS

Cambridge -- American Science & Engineering (four contracts), $147,000, incremental funding through March 31 for HEAO AXR-2 experiment hardware, $350,000, incremental funding through Feb. 15 for HEAO AXR-2 experiment hardware, $351,000, incremental funding for the Apollo Telescope Mount Experiment, and $1,555,000, incremental funding through March 31 for HEAO Mission B X-Ray Telescope experiment.

Harvard College (two contracts), $317,000, incremental funding through April 30 and $85,000, an increase in funds for settlement of contracting officer's letter of Dec. 4, 1974, Apollo Telescope Mount Experiment: Scanning Polychrometer-Spectroheliometer; Massachusetts Institute of

Technology (two contracts), $121,000, incremental funding through April 30 for HEAO Mission B Telescope Experiment, and $62,000, incremental funding through June 30 for AGR 5 High Energy X-Ray Experiment for HEAO.

Smithsonian Institution (three contracts), $99,000, incremental funding through March 31 for HEAO Mission B X-Ray Telescope Experiment, $151,200, to amend the scope of work and extend the period of performance for Gravitational Redshift Space Probe Experiment and preliminary design support of HEAO, and $30,000, incremental funding through Dec. 31 for the A-3 Scanning Modulation Colimeter Experiment of HEAO, and Raytheon Co., Sudbury, $49,514, incremental funding and extension of the period of performance on the Clear Air Turbulence Detection System.

MINNESOTA

Minneapolis -- University of Minnesota, $40,000, incremental funding through July 15 for ACR-F Nuclei Experiment of HEAO.

MISSOURI

St. Louis -- Washington University, $38,000, incremental funding through July 31 for ACR-7 Nuclei Experiment for HEAO.

NEW YORK

Albany -- New York State University, $57,000 for an electrophoresis technical experiment for the Apollo Soyuz Test Project (ASTP).

NORTH CAROLINA

Durham -- U. S. Environmental Protection Agency, $25,003, additional funds for the Smoke Stack Gas Velocity Measurement Program.

PENNSYLVANIA

Allentown -- Air Products and Chemicals, Inc., $188,450, for liquid hydrogen for Nov., 1974.

Bethlehem -- Lehigh University, $49,980 to expand the scope of work and extend the period of performance for an electrophoresis experiment analysis for space.

TENNESSEE

Chattanooga -- Siskin Steel & Supply Co., $128,054 for 12 items of carbon steel.

TEXAS

Houston -- Bernard Johnson, Inc., $26,497 to amend the statement of work to include field services inspection for architect-engineer services at Slidell Computer Complex.

UTAH

Brigham City -- Thiokol Corp., $1,750,000, an increase in funds and extension of letter contract through Jan. 31.

VIRGINIA

Alexandria -- U. S. Army Materiel Command, $100,000 to co-sponsor the design and development of an advanced hybrid computing system.

WASHINGTON

Seattle -- The Boeing Co., $699,543 for a Large Space Telescope (LST) Support Systems Module definition study.

WASHINGTON, D. C.

Naval Research Laboratory, $238,000, additional funds for Apollo Telescope Mount Experiment SO82 and to extend the period of performance; UNIVAC Division of Sperry Rand Corp., $400,764, extend contract for 12 months for the maintenance of a government-owned UNIVAC 1108 multiprocessor computing system.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:

Upon Receipt
Release No. 75-19

ASTP LAUNCH VEHICLE STACKED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Saturn IB launch vehicle which will be used in the Apollo Soyuz Test Project (ASTP) this summer has been stacked on its mobile launcher inside the Vehicle Assembly Building (VAB) at the NASA-Kennedy Space Center (KSC). Jan 13

The vehicle (designated SA-210), developed under direction of the NASA-Marshall Space Flight Center (MSFC), will launch three U. S. astronauts aboard a modified Apollo command module on July 15, 1975, to rendezvous and dock with the Soviet Union's Soyuz spacecraft, which will be launched from the U. S. S. R. seven and one-half hours earlier.

A boilerplate unit simulating the Apollo command module was temporarily stacked atop the launch vehicle, which consists of a first stage (S-IB-10), second stage (S-IVB-210), and instrument unit (IU-210). The boilerplate will be removed and the actual spacecraft erected on March 18.

The complete Saturn space vehicle will be transferred on March 24 to the launch pad, where final preparations for launch will begin.

Rollout had originally been scheduled for March 31, but was moved up one week, which will provide contingency time for spacecraft checkout at the launch site.

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January 24, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205 453-0034
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FOR RELEASE:

Upon receipt.
Release no. 75-21

ASTP COSMONAUTS TO VISIT MARSHALL SPACE FLIGHT CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- Soviet cosmonauts assigned to this summer's joint U.S.-U.S.S.R. manned space mission, the Apollo-Soyuz Test Project (ASTP), are tentatively scheduled to visit the NASA-Marshall Space Flight Center (MSFC) on Feb. 21.

The Russian group will include the ASTP prime crewmen, Aleksey A. Leonov and Valeriy Kubasov, and three backup crews.

The other six cosmonauts slated to visit MSFC are: Anatoliy Filipchenko and Nikolay Rukavishnikov, Crew 2; Vladimir Dzhanibekov and Boris Andreyev, Crew 3; and Yuriy Romanenko and Aleksandr Ivanchenko, Crew 4.

American astronauts scheduled to accompany the cosmonauts are: Thomas P. Stafford, Vance D. Brand and Donald K. Slayton, Prime Crew; Alan L. Bean, Ron E. Evans and Jack R. Lousma, Backup Crew; and Robert F. Overmyer, Karol J. Bobko, Robert L. Crippen and Richard H. Truly, Support Crew.

Three weeks of training at the NASA-Johnson Space Center are

-More-

Jan. 28, 1975

scheduled for the cosmonauts. In addition to the MSFC visit, a side trip to the NASA-Kennedy Space Center is slated.

MSFC was responsible for the development of the Saturn IB launch vehicle which will be used to launch three U. S. astronauts aboard a modified Apollo command module on July 15 to rendezvous and dock with the Soviet Union's Soyuz spacecraft, which will be launched from the U.S.S.R. seven and one-half hours earlier.

MSFC is also monitoring development of several experiments on materials processing in zero-gravity which will be conducted during the ASTP mission.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
Residence, 205/561-3559

FOR RELEASE:
Upon Receipt
75-22

CONTRACTS AWARDED BY MSFC FOR SOLAR COLLECTOR PANELS

MARSHALL SPACE FLIGHT CENTER, Ala. -- Three contracts were awarded recently by the NASA-Marshall Space Flight Center (MSFC) as a part of its research and development efforts in residential solar energy heating and cooling.

The contracts were the result of a Request for Proposals (RFP), issued by MSFC last June calling for design, fabrication, testing and delivery of a low cost solar collector for residential heating and cooling.

Chamberlain Manufacturing Corp., Waterloo, Iowa, was awarded a $72,621 contract and Honeywell, Inc., Minneapolis, Minn., was awarded a contract for $104,255. The third contract was awarded to PPG Industries, Pittsburgh, Pa., who offered to furnish collector panels from off-the-shelf hardware at essentially no cost.

Copies of the RFP were sent to more than 75 firms throughout the United States and, following a preproposal conference attended by about 40 firms, 10 proposals were received and evaluated by MSFC.

-more-

January 28, 1975

Chamberlain and Honeywell will each design, manufacture and deliver by this September a low-cost solar collector based on existing technology and on the current system requirements of the solar heating and cooling demonstration unit at MSFC.

The primary objective of this effort is to establish collector design and manufacturing techniques which yield low cost and aesthetically appealing collectors which can be commercially manufactured in quantity, with the major emphasis placed on engineering and the ultimate fabrication of a sample collector as an end product.

The solar heating and cooling test facility at MSFC, which has been in operation since June, 1974, is an engineering evaluation facility used to show only that performance predictions are correct and to identify system operation problems.

In the second stage of the program, of which these contracts are a part, an attempt will be made to optimize collector design from a cost, aesthetic, installation, maintainability and durability standpoint.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-23

SOUNDING ROCKETS TO BE USED FOR SPACE PROCESSING EXPERIMENTS

MARSHALL SPACE FLIGHT CENTER, Ala. -- Materials processing experiments in near-weightlessness will be performed for the first time aboard unmanned sounding rockets in a new project to be managed by the NASA-Marshall Space Flight Center (MSFC).

Three flights per year are planned from 1975 through 1980. Initially, the project will use small Black Brant VC sounding rockets, fired from the Army's White Sands Missile Range in New Mexico, and providing up to six minutes of low gravity (one ten/thousandth of Earth's gravity) during the coast phase of the sub-orbital ballistic trajectory.

A larger rocket, the surplus Minuteman I second stage called Aries, is being studied for possible use beginning in 1976 or 1977. The Aries would have a 44-inch payload diameter, compared to 17 inches for Black Brant, would have three to four times as much weight-carrying capability, and could provide up to 10 minutes of low gravity.

-more-

January 28, 1975

The use of NASA's Wallops Flight Center in Virginia is also being considered as a future launch site.

All scientific payloads will be recovered for ground analysis. The NASA-Goddard Space Flight Center will provide launch and payload recovery services.

MSFC is managing the project under the sponsorship of NASA's Office of Applications.

Project Manager for MSFC will be Roger P. Chassay, of the Space Processing Study Team, Advanced Projects Office, Program Development.

The new project is a low-cost effort using sounding rockets already in NASA's inventory. Its goal is to expand upon the observations made during the Skylab missions where metals were melted and allowed to solidify with little convection and sedimentation.

Significant improvement in material characteristics were found to be possible in processing in near-zero gravity. The size of material samples processed on sounding rockets will be as large as those processed on Skylab, because active cooling will be used instead of the time-consuming passive cooling on Skylab.

Analysis of the usefulness of only six minutes of low-gravity processing time revealed that a great number of materials can be solidified during rocket flight. Two meetings in recent months with 50 scientists from universities and industry confirmed the analysis and supported development of the new project which has been under study for the past two years.

Industry representatives are increasingly interested in the prospects of space-manufactured products which can create new markets and expand existing markets. This research may also dramatically improve ground-based processes through better understanding of materials behavior during melting, solidification, and heat treating--without the masking effects of gravity.

The cost-effective rocket missions will provide the only means of obtaining space processing scientific data in near-zero gravity prior to the Space Shuttle flights in the 1980's, except for the upcoming Apollo Soyuz Test Project in mid-1975.

The rocket flights will also provide valuable preparations in several ways for the large-scale space processing planned for the Space Shuttle.

The rocket experiments can assist in increasing participation by the user community, can establish a means for prioritizing future space processing experiments, and can establish precedents for jointly-sponsored or commercially-funded materials experiments.

NASA will continue to encourage industrial participation in rocket and Space Shuttle space processing experiments, leading ultimately toward commercial manufacturing of unique and improved products in space.

To ensure that the rocket project plans were based upon scientific rather than engineering requirements, a series of meetings was held with 29 scientific consultants from universities and industrial firms specializing in

metals, glasses, semi-conductors, containerless processing, and fluid mechanics.

Using these requirements, the Marshall Space Flight Center then modified "off-the-shelf" hardware or developed simplified experiment apparatus for use on the research rockets. This apparatus will be used to conduct experiments selected from proposals now being solicited from scientists in universities, industry, government, and foreign countries. The experiment proposals will be evaluated and, after selection, several experiments will be assigned to each flight payload.

Apparatus now being prepared for rocket flight payloads includes basic furnaces which will support a wide variety of anticipated experiments.

Also being developed are levitation devices which allow experimental materials to be melted and solified while "floating" free of container walls. This containerless processing, to be accomplished using acoustic or electromagnetic fields, should dramatically enhance the material properties since contact with container walls, and the accompanying stress and contamination, is avoided--something not possible on Earth.

Each item of this payload equipment is designed for use on two or more missions. This reuseability feature, combined with the inherent cost-effectiveness of sounding rockets, provides a very economical method to obtain meaningful space processing scientific data. Some of these items of payload equipment have been flown on earlier rocket flights conducted primarily for physics and astronomy experiments, thereby providing a strong base of confidence and also minimizing development costs.

The most important benefit to this project of these earlier rocket flights was the confirmation that a useful low-acceleration environment can be obtained using the Black Brant VC rocket. The necessary low acceleration environment is obtained above the 300,000-foot level of the rocket's sub-orbital trajectory and provides a low-gravity environment for processing materials largely free of the sedimentation and convection encountered on Earth.

The rocket space processing experiments are limited primarily by time, although weight and volume are also constraints. However, in the six minutes of low-acceleration available, a variety of experiments can be performed in almost all of the basic space processing areas presently contemplated by ground-based studies.

Experiments will be conducted using composite materials, super-conductors, semi-conductors, free alloys, oxide glasses, chalcogenide glasses, and biological materials.

# # #

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Joe Jones, 205/453-0031
Residence, 205/852-4109

FOR RELEASE:
Upon Receipt
Release No. 75-24

REDUCTION IN FORCE AFFECTS 213 AT MARSHALL CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- Notices are being delivered today to 213 NASA-Marshall Space Flight Center employees who are being either separated or reduced in grade in the Fiscal Year '75 reduction-in-force (RIF). The effective date of these actions is March 14.

According to Howell Riggs, director of the Manpower Office, separation notices were issued to 93 employees and notices of reduction in grade went to 120 employees.

In addition, 191 employees are receiving reassignment as a result of a reclassification survey conducted last summer.

A vigorous program of outplacement assistance is being offered by the Manpower Office to help locate employment and provide job counseling for employees affected by the RIF.

NASA Headquarters has established the policy that before filling other vacancies by any means, NASA installations are required to consider available MSFC employees and make the maximum effort to hire them.

January 29, 1975

The mandatory placement and special consideration requirements will be in effect until March 31.

The MSFC Outplacement Office also offers employees assistance and counseling in securing employment with other government agencies throughout the world. A current listing of vacancies announced by various sources is published weekly in the "Marshall Star" and is posted on a bulletin board outside the Outplacement Office in building 4202.

Another source of placement assistance is the NASA Outplacement Register. MSFC employees may apply in the Outplacement Office to be entered on the NASA Outplacement Register for up to three positions for which they qualify, at and below the grade from which they are being separated, at any NASA installation at which they are willing to accept employment.

The Civil Service Commission Displaced Employee Program will provide additional placement assistance for MSFC employees who may be affected by the RIF. This assistance is also available in the Outplacement Office.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205 453-0035
Residence, 205 561-3559

FOR RELEASE:

Upon Receipt.

Release No. 75-25

MSFC RESEARCH REPORT MADE TO IGU CONFERENCE

MARSHALL SPACE FLIGHT CENTER, Ala. -- A report of cooperative research being conducted by the NASA-Marshall Space Flight Center (MSFC), the Tennessee Valley Authority (TVA) and the Oak Ridge National Laboratory (ORNL) was presented recently in New Zealand at a conference of the International Geographical Union (IGU).

The paper, "Regional Environmental Analyses and Management -- New Technologies for Current Problems," was authored by C. T. N. Paludan, chief of the Earth Resources Office, Data Systems Laboratory at MSFC, and R. B. Honea of ORNL. It was presented by Dr. James R. Anderson, chief geographer of the U. S. Department of Interior.

Included in the report was computer analyses of satellite data from MSFC, a computerized mathematical model of land-use change by ORNL, and user applications by TVA. Examples shown included a satellite-derived land-use map of North Alabama and part of Tennessee and some images of New Zealand from Skylab.

-More-

Jan. 29, 1975

More than 100 geographers from all parts of the world attended the IGU conference, and Dr. Anderson reported on his return that considerable interest was shown in this application of satellite data with particular interest in the Skylab data from hand-held photography.

The Marshall Center involvement in the IGU is a result of the 1972 appointment of Paludan to membership on the IGU's Commission on World Land Use Survey. The Commission was established in 1949, primarily due to concern for the world's food supply, but lack of current data had been a major problem until the launch of NASA's Earth Resources Technology Satellite, recently renamed Landsat-1, in July, 1972.

Paludan is the only United States member on the commission and the first in many years. Other members are from Switzerland, Japan, Hungary, France and Canada.

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NASA News

National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812
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For Release:
Upon Receipt
Release No. 75-26
12/10/75

SPACE STATION COULD HELP SOLVE WORLD PROBLEMS

MARSHALL SPACE FLIGHT CENTER, Ala.--A long duration free-flying manned space station in Earth orbit could enable scientists to pursue programs that would improve life on Earth.

That is the determination made in a recently completed "M aed Orbital Systems Concepts" study conducted for the NASA-Marshall Space Flight Center by McDonnell Douglas Astronautics Co.

Programs that could be carried out include Earth resources management, pollution control, global communications, weather forecasting, manufacturing of critical materials and medicines, and new energy sources.

Such a station would also be a viable and cost-effective adjunct to the Space Shuttle system, the study indicated, and appears to be the most economical way to provide a continuing manned presence in space.

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A long-duration space station that could extend significantly beyond the seven to 30 days of stay time in space planned for the Space Shuttle would provide many advantages, such as allowing enough time for physiological adaptation and physical growth processes to be investigated, and offering the improved efficiency that results from the crew learning to work more effectively with repeated trials and acclimation to the space environment.

Longer missions offer potential savings by allowing less tightly constrained timelines and work schedules, permitting a given amount of work to be done with fewer flights, and reducing the number and extent of turnarounds, refurbishment cycles and checkout operations.

The study anticipates that a permanent manned facility, with crews rotated by Shuttle flights, would provide for maintenance, repair and modification of payloads, and even reconfiguration of payloads.

Crewmen could service satellites in orbit, assemble large space structures to develop scientific and observational capabilities not possible on Earth, and assemble large antennas for mass communication or power transmission.

The basic orbital facility would have the flexibility and growth capability to accommodate new users and meet new needs as they are identified.

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The four-man baseline configuration that resulted from the study consists of a subsystems module and habitability module carried into orbit by one Shuttle Orbiter and joined with a logistics module and payload module carried on a second mission.

Each module has an international docking assembly at each end. The on-orbit module docking arrangement was envisioned as logistics module at one end, with the subsystems, habitability and payload modules docked in tandem in that order.

Several payload modules could be docked in tandem with the core vehicle, or in radial locations via use of a multiple port docking adapter, to expand research capabilities.

Basically cylindrical, the modules would fit inside the Orbiter cargo bay. The core vehicle, consisting of the subsystems and habitability modules, would be 15.5 meters (50.5 feet) long. The logistics module would be 6-9 meters (22.7 feet) long and a typical payload module 8.3 meters (26.6 feet). Planned launch weight would be 29,484 kilograms (65,000 pounds) maximum, and landing weight would be 14,515 kilograms (32,000 pounds) maximum.

The study proposed that the core vehicle be left on station for its nominal orbital lifetime of five years and that logistic and payload modules be replaced at 90-day intervals. Crew exchange and resupply periods were set at 90 days.

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Orbital altitudes would range from 100 to 300 nautical miles, with 200 being nominal. Orbits ranging from low inclination to polar were considered, with a suggestion that one facility be placed in a 28.5-degree inclination orbit and a second in polar orbit. Space Station mission applications at geo-synchronous orbit altitudes were also addressed.

The study proposed an evolutionary program beginning with development of four-man facilities that would serve as building blocks for growth into larger stations for 12 or 24 men, as needed.

The study concluded that the anticipated world problems of the 1990s must be faced and solved in the 1980s and that an extended-duration manned orbital facility could contribute significantly to those solutions.

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December 10, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
Residence, 205/561-3559

FOR RELEASE:
Upon Receipt
Release No. 75-27

Also released at
Washington, D. C.

NASA ASSIGNS AMPS PAYLOAD STUDY TO MARSHALL CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- NASA's Office of Space Science has assigned the Marshall Space Flight Center, Huntsville, Ala., overall responsibility for a definition study of the Atmospheric, Magnetospheric and Plasmas-in-Space (AMPS) Spacelab payload.

The payload unit will be a spaceborne, Earth-orbiting scientific laboratory, manned by scientists and equipped to study the environment in which it flies. It is one of several Spacelab payloads planned for flight on the Space Shuttle in the 1980s and 1990s.

The Shuttle is a reusable launch vehicle now being developed by NASA as a part of its future Space Transportation System. The Spacelab, into which the laboratory unit will be installed for flight, is being designed by the European Space Research Organization (ESRO). It is a large, basic module, carried in the Shuttle.

-more-

January 31, 1975

Through use of the laboratory, scientists will obtain a better understanding of the dynamic processes of the atmosphere and magnetosphere which influence everyday problems such as communications blackouts, atmospheric pollution and, possibly, even solar-weather relationships.

In addition to studying the processes controlling the Earth's atmosphere, ionosphere and magnetosphere, this manned scientific laboratory will conduct experiments in plasma physics in the zero-gravity, free-space environment surrounding the Spacelab.

The laboratory unit experiments will involve active and passive probing techniques. Missions flown to date have used primarily passive instrumentation which has simply measured the characteristics of these dynamic processes.

With the use of active experiments such as electron accelerators and high-power transmitters, the AMPS payload will be able to momentarily perturb the atmosphere and magnetosphere and measure the resulting reactions. With its orbit in the ionosphere at an altitude of a few hundred kilometers, the Shuttle/Spacelab will be ideally placed to probe extensive regions of Earth's atmosphere and magnetosphere.

The ability to involve the scientist directly in the conduct of atmospheric and magnetospheric experiments will open a new dimension in space research. The laboratory will be available to scientists from large and small institutions.

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Operation will be patterned after other national research facilities such as large ground-based telescopes. Scientists will be able to use the facility equipment furnished by NASA and have their own specialized equipment installed to personally conduct their experiments in space. They will work within the Spacelab or the orbiter cabin in a "shirtsleeve" environment, and control instruments which are externally mounted and exposed to the surrounding space. As many as four scientists will be able to work within the Spacelab payload unit on each mission.

During the definition study phase of the laboratory unit program, Marshall Center will work closely with a science working group chosen last year by NASA. The group consists of 49 scientists from the United States, Canada, England, France, Germany, Italy, Norway, Sweden and Japan.

These scientists, who come from government, universities and industrial research laboratories, will advise MSFC on payload scientific objectives and instrument requirements. Later this year, Marshall will initiate contracted studies for the design of the laboratory.

The Program Development directorate at the Marshall Center is managing the payload unit project definition studies for NASA's Office of Space Science, Washington, D. C.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:

Upon receipt.
Release No. 75-28

Also released at
Washington, D.C.

EXTERNAL TANK DEFINITIZED CONTRACT ISSUED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has issued a definitized contract to the Martin Marietta Corporation for the design, development and test of the Space Shuttle External Tank (ET).

The cost-plus-award-fee type contract is for Increment 1 of the ET project, including design, development and test of the ET, maximum production rate of 24 ETs per year and delivery of major ground test articles and six flight model ETs.

Period of performance is Sept. 1, 1973, through June 30, 1980. Initial work in the program was done under a letter contract. The value of this action is $152,565,000, which includes the amounts expended under the letter contract and to settle changes.

Martin Marietta will be producing the ETs at the Michoud Assembly Facility at New Orleans. The MAF is a satellite installation of the NASA-Marshall Space Flight Center.

The Marshall Center is responsible for development of the ET, the Solid Rocket Boosters (SRBs) and the Space Shuttle Main Engine (SSME).

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Jan. 31, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Bill Mayes, 205/453-0036
Residence, 205/881-9094

FOR RELEASE:

Upon Receipt
Release No. 75-29

MARSHALL ISSUES TWO CONTRACTS FOR TELEOPERATOR WORK

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued two contracts to the Martin Marietta Corp., for further studies on the Earth Orbiting Teleoperator System (EOTS), formerly known as Free Flying Teleoperator System.

Under a $246,570 contract, Martin will conduct a study to design the system. The EOTS is to be an unmanned, remotely-controlled spacecraft which will operate in Earth orbit near the Space Shuttle Orbiter.

The total system will be free-flying, controlled either from the Orbiter or possibly the ground, will carry a television camera for close-up inspection, have a docking capability and be propelled by cold gas expulsion through 16 thrusters.

The system will maintain compatibility with the Orbiter, Spacelab and the Marshall Center's Concept Verification Test (CVT) facility. It will also be fully integrated with the Space Transportation System's Multi-function Display System.

-more-

January 31, 1975

Under a $64,000 contract, Martin is to develop a complete set of Control and Display (C&D) station requirements and interface requirements for the various experiments proposed for the Orbiter which could call for use of a teleoperator system.

The C&D station will be in the aft cabin of the Orbiter and will have, to a high degree, control equipment common to all experiments.

Any specialized control equipment for a particular experiment could be installed quickly in the C&D station by standardizing the design of control units.

MSFC engineers are involved in design and development of numerous components of the EOTS, including a variety of manipulator arms, end effectors, control units and television systems.

Extensive testing is being done to determine the best combination of all these components for the EOTS.

The C&D contract with Martin expires in November, 1975, when study data, plus mockups, will be delivered. No flight hardware is being developed under the contract. The total system contract is a one-year effort which ends Jan. 3, 1976.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

FOR RELEASE:

Curtis Hunt, 205 453-0035
Residence, 205 852-1763

Upon receipt.
Release No. 75-30

RFPs ISSUED FOR COMPUTER SUPPORT SERVICES

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued requests for proposals (RFPs) for general scientific computation services for the Huntsville Computer Complex at MSFC and for computational and facility operation services for the Slidell Computer Complex at Slidell, La.

The RFPs were mailed to 97 firms most likely to be interested in providing the services. RFP copies are available to all interested firms.

Separate pre-proposal conferences will be conducted. The conference for the Huntsville complex will begin at 9 a.m. Feb. 11 at MSFC's Morris Auditorium. The Slidell conference will begin at 9 a.m. Feb. 13 at the Slidell facility.

The pre-proposal conference at each location will include facility orientation tours and a question and answer period.

Proposals for both tasks are due March 10. Cost-plus-award-fee (CPAF) type contracts are planned.

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Jan. 31, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
Residence, 205/561-3559

FOR RELEASE:

Upon Receipt
Release No. 75-31

AMPS WORKING GROUP MEETS AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The fourth meeting of the Atmospheric, Magnetospheric and Plasmas in Space (AMPS) Science Working Group is being held at the NASA-Marshall Space Flight Center (MSFC) this week. This group of 49 scientists from throughout the world was selected by NASA to define the AMPS payload requirements and to provide scientific guidance throughout the design phases.

The AMPS Science Working Group is directed by an AMPS Steering Committee that provides advice to the MSFC Payload Studies Office in the Program Development directorate.

The AMPS payloads, to fly in the Shuttle/Spacelab, will provide a focal point for scientists conducting atmospheric and magnetospheric research in the 1980's. They will also provide to plasma physicists access to a new aspect of research -- space plasma.

The Science Working Group is currently defining the operational requirements for the AMPS instruments and preparing scientific objective documents. Divided into four sections -- atmospheric science, wave phenomena, particle interactions and plasma interactions and flow -- the scientists are concerned with defining the instruments and missions required to conduct

-more-

experiments successfully in their respective areas.

During the meeting this week a fifth section to the AMPS Science Working Group will be formed. This will be called the AMPS Payload Organizational section, which will define the desired scientific operational activities of the total AMPS payload.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

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FOR RELEASE:

Upon receipt.
Release No. 75-34

BIDS INVITED FOR MICHOUD WORK

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued invitations for bids on utility piping modification work to be done at the Michoud Assembly Facility at New Orleans. Bids are due by 1:30 p.m. March 6.

The effort is planned to be completed in 180 days and is to include: Fabrication and installation of large diameter lined and coated steel piping; demolition and removal of some existing piping; excavation, shoring, filling, bedding and levee work; construction of sections of concrete retaining wall and foundation wall; paving and above-ground masonry; installation of steel pipe supports above ground; and reinforced concrete pipe supports underground.

Surveys of the work site will be conducted for prospective bidders. Interested contractors should contact Marvin Green at the Facilities Office at the Michoud plant, telephone 504-255-2583.

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Feb. 12, 1975

NASA—MSFC

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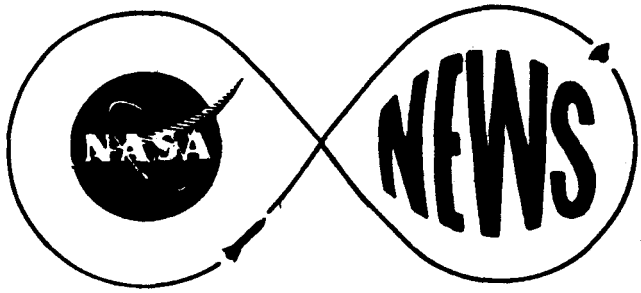

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0035
Residence, 205/852-1763

FOR RELEASE:

Upon receipt.
Release No. 75-35

RFQ ISSUED FOR ZERO-G LIQUID-GAS SEPARATOR SYSTEM

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a request for quotations from the aerospace industry for the design, fabrication and delivery of a zero-gravity liquid-gas separator and liquid disposal system.

Quotations are due Feb. 28 on the 18-month effort. A cost-plus-fixed-fee type contract is planned.

The objective of the effort is to develop a system which will be relatively insensitive to contamination for a spectrum of probable spacecraft liquids and which will require little or no crew time to operate.

The effort is aimed primarily at advancing the "state-of-the-art" in such systems for future use in space. The need for such advancement became evident with problems encountered during the Skylab mission.

On Skylab, turbulence and foaming of liquids in the separation process tended to create a build-up of particles and gummy substances in small passages and reduced pumping capability.

-More-

Feb. 12, 1975

Such systems have been developed for past space flights. However, systems used for transfer, separation and disposal of liquids -- such as urine and waste water -- on previous manned vehicles in space were relatively sensitive to contamination and complicated to operate.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:
Upon receipt.
Release No. 75-36

RFQ ISSUED FOR TRANSPARENT FURNACE SYSTEM

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued to the aerospace industry a request for quotations on a transparent furnace system for materials processing. Quotations are due March 3.

The work will be a two-phase, 16-month effort under a planned cost-plus-fixed-fee contract.

The contract will call for the design, fabrication, test and delivery of one non-flight engineering model and two flight versions of the transparent furnace system proposed for possible use on Black Brant VC sounding rockets.

During the first phase of the work, the contractor will conduct a feasibility study to determine the practical operational limits of such a system.

The system is to be isothermal with two distinct heat zones and a maximum temperature capability of 1,000 degrees C. It must operate on an input of 28 volts DC at a maximum of 280 watts. The non-flight version is to be delivered under the first phase.

-More-

Feb. 12, 1975

Under the second phase, the contractor is to design, fabricate, test and deliver two flight model systems that are compatible with the physical and environmental constraints of the Black Brant VC rocket.

Experiments in space processing of materials are to be conducted aboard sounding rockets by NASA at the rate of three flights per year from 1975 through 1980. The first launch vehicles, Black Brant rockets, are to be fired from the Army's White Sands Missile Range in New Mexico to provide up to six minutes of low gravity during the coast phase of each flight. Larger rockets may be used for later flights.

Scientific payloads will be recovered by parachute for ground analysis.

The Marshall Center is managing the project for NASA's Office of Applications. The Goddard Space Flight Center will provide launch and payload recovery services.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:

Upon receipt.
Release no. 75-37

SUN MIGHT FURNISH ELECTRICITY TO LIGHT CITIES

MARSHALL SPACE FLIGHT CENTER, Ala. -- A power plant in space, generating electrical power from the Sun, may furnish electricity to operate industries, light cities and supply many other Earth-bound electrical power needs in the future.

Or, a solar power generating plant in a remote area of the Earth may transfer power via an Earth satellite to users thousands of miles away.

Studies in the past have defined concepts for generating solar power in satellites in geosynchronous Earth orbit and transmitting it to Earth via microwaves and for generating solar power in remote locations on Earth and transmitting it to the desired location via an orbiting satellite microwave relay system.

Econ, Inc., of Princeton, N. J., was awarded recently a 10-month $149,325 study contract by the NASA-Marshall Space Flight Center (MSFC) to explore the technical and economic feasibility of these two systems and to compare them with terrestrial power plants expected to exist in the future.

-More-

Feb. 14, 1975

The Econ study will define requirements for payload packaging, launching to orbit, deployment, checkout and orbital resupply, considering the Space Shuttle/Space Tug, or derivatives, as vehicles for launch and deployment.

The study will also define research activities necessary for the development, launch and operation of these large orbiting power conversion and power relay systems.

Structures, packaging and deployment of the solar power generating system and power relay satellite will require innovation and conceptual design. Econ will make use of data already available from previous and current studies at the Marshall Center and other NASA installations in this study.

For example, a study recently completed by Lockheed Aircraft Corp. for MSFC resulted in an improved design for a solar array with structural weight substantially lower than the solar arrays developed for Skylab.

The improved version would provide 30 watts per pound of solar array weight, compared with six watts per pound on Skylab.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon receipt.
Release no. 75-38

BIDS SOUGHT FOR REHABILITATION OF BUILDING AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued an invitation for bids for the rehabilitation of one wing of an MSFC building. Bids are due by 1:30 p.m. March 4.

The B-wing of building 4663 is to be rehabilitated during the 150-day effort. B-wing is the center of three wings of the structure housing MSFC's computer services, including the Huntsville Computer Complex and Huntsville Operations Support Center.

Rehabilitation under the contract will include installation and-or replacement of suspended ceiling system and work on the heating, air conditioning and internal electrical systems.

Prospective bidders may contact Paul McQueen at 205/453-2680 to arrange for surveys of the work site.

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Feb. 19, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No. 75-39

MSFC's JANUARY CONTRACTS LISTED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center during January awarded the following contracts of $25,000 or more:

ALABAMA

Huntsville -- Brown Engineering Co., $3,667,427 to extend the term of the contract for engineering support services at the Marshall Center; Computer Sciences Corp., $595,000, incremental funding through Jan. 31 for computation support services; Hewlett-Packard Co., $35,396 for computer processor equipment; and IBM Corp., $74,247 for the design, fabrication, installation and checkout of a prototype sunfall monitor.

Lockheed Missiles and Space Co., Inc. (two contracts), $67,500 for the development of the capability to predict radiant heating rates to the base region of Space Shuttle launch vehicles, and $49,971 to amend the scope of work and extend the period of performance for a two-phase study of flow field effects on Space Shuttle plume simulation.

-more-

February 24, 1975

Management Services, Inc., $988,524 incremental funding through April 14 for general support services; M&S Computing, Inc. (two contracts), $323,260 for a modular operating system for the space ultrareliable modular computer for the Concept Verification Test (CVT), and $137,966, an extension of the Banning computer program; McAlister & McQuinn Construction Co., Inc., $427,832 for modifications to the Space Sciences Laboratory, building 4481, phase IV; and Northrop Services, Inc. (four contracts), $1,833,867 to extend the term of the contract for mission support services at MSFC, $256,000 in incremental funding through Jan. 24 for mission support services, ($35,015) a decrease in funds and services to be performed, and $29,945 to amend the scope of work and to extend the period of performance for a study on Space Tug recovery of a spinning satellite.

Planning Research Corp. (two contracts), $220,264 to extend the contract of specialized support in logistics engineering for the Shuttle program, and $276,129 for advanced systems cost estimating techniques; Remtech, Inc. (two contracts), $50,000 to amend the scope of work and extend the period of performance for the "Space Shuttle Plume Simulation Effect on Aerodynamics" study, and $25,000 to expand the scope of work and extend the period of performance for the "Space Shuttle External Tank Noncontinuum Flow Heat Transfer Test and Data Analysis."

SCI Electronics, Inc., $39,619, funds for overrun on the data bus terminals and remote data acquisition units for the CVT bus breadboard; Sperry Rand Corp. (two contracts), $4,136,940 to extend the term of the contract for engineering support services at MSFC, and $400,000, incremental funding through Jan. 25 for engineering support services; and Superior Technical Services, $60,000 for architectural-engineering services for miscellaneous facility projects and studies at MSFC.

U. S. Army Engineer Division (two contracts), $2,000,000 for the construction of the structural test facility for the Solid Rocket Booster (SRB) at MSFC, and $2,930,000 for the construction and modification to the Dynamic Test Facility, building 4550, for the Shuttle mated vertical ground vibration test at MSFC; University of Alabama (three contracts), $90,919 for a study on Earth and ocean modeling, $80,000 for a cloud physics laboratory project science and application working group, and $75,000 to expand the scope of work and extend the period of performance for a working model of the "London Moment Readout System" study.

Redstone Arsenal -- U.S. Army Missile Command (two contracts), $394,000, additional funds for Redstone Scientific Information Center services rendered to MSFC, and $1,703,000, additional funds for maintenance and repair of electrical equipment, sanitary fill, electricity, heating (steam), water and sewage for MSFC.

Talladega -- Talladega College, $25,650 for a study on far-infrared lattice properties of gallium arsenide.

Tuskegee -- Tuskegee Institute, $29,995 for an investigation of the effects of coronal and electrical discharges on the degradation of insulation materials.

ARIZONA

Tuscon -- University of Arizona (two contracts), $56,045 for the maintenance and operation of the 60-inch NASA telescope, and $35,000 to expand the scope of work and extend the period of performance for a stray light suppression study.

CALIFORNIA

Canoga Park -- Quelex Data Systems, Inc., $60,635 to design, develop, install and certify by testing the "Byte String Manipulation Decimal and Map Functions;" Rockwell International, Rocketdyne Division (three contracts), $40,000 for the modification of the stiff-leg derrick crane system on the Coca I and Coca 4 test stands in support of the Shuttle program, $1,000,000 in incremental funding through April 15 for operational and flight support effort and associated support for Saturn engines, and $15,000,000 in incremental funding through Feb. 24 for the Space Shuttle Main Engine (SSME).

Huntington Beach -- McDonnell Douglas Corp., $1,915,000 in incremental funding through April 21 for the S-IVB stage in support of the Apollo Soyuz Test Project (ASTP).

Mountain View -- Aerotherm Division, Acurex Corp., $ 91,300 to expand the scope of work for delivery of unified computer codes.

Palo Alto -- Lockheed Missiles and Space Co., Inc., $59,740 to expand the scope of work and extend the period of performance for analysis of data obtained during the Apollo Telescope Mount (ATM) Skylab mission.

Santa Barbara -- Mission Research Corp., $67,916 for support of lighting analysis and testing on the SRB.

South Pasadena -- The Perkin-Elmer Corp., $334,100 for the design, fabrication, test, delivery, installation and checkout of an optical bench and alignment system for an X-Ray Telescope Facility.

Sylmar -- Spectrolab Division of Textron, Inc., $70,516 for the fabrication and delivery of one Large Area Pulsed Solar Simulator (LAPSS).

COLORADO

Boulder -- Universal Corp., for Atmospheric Research, $98,971 in incremental funding through June 30 for the ATM, White Light Coronagraph.

Denver -- Bendix Corp., $50,114 to amend the scope of work and to extend the period of performance for a definition study (Spacelab); Martin Marietta Corp. (four contracts), $246,570 for free-flying teleoperator systems concepts and analyses, $125,000 in incremental funding through Nov. 14 for a study of track-train dynamics analysis and test program, $64,400 to expand the scope of work and extend the period of performance for the "Integrated Orbital Servicing Study for Low Cost Payload Programs," and $165,000 in

incremental funding through Feb. 28 for Skylab systems engineering and integration.

CONNECTICUT

East Hartford -- United Aircraft Corp., $39,041 to expand the scope of work and extend the period of performance for the study of processing eutectics in space.

GEORGIA

Atlanta -- 3M Business Products Sales, Inc., $44,118 to extend the contract for rental of a NASA facsimile telecommunications service network.

IOWA

Waterloo -- Chamberlain Manufacturing Corp., $72,621 for the design, fabrication, test and delivery of a solar collector.

LOUISIANA

New Orleans -- Chrysler Corp. (two contracts), $1,500,000 in incremental funding through June 22 for systems engineering and integration in support of the ASTP, and $90,940 to expand the scope of work and extend the period of performance for the study of water impact tests of SRB models; and Martin Marietta Corp., $152,565,000 for the design, development, test and evaluation of the Space Shuttle External Tank (ET) including six flight units and test hardware.

MASSACHUSETTS

Cambridge -- American Science and Engineering, $100,000 in incremental funding through June 15 for an ATM experiment; and Harvard College (two contracts), $105,000 in incremental funding through June 30 for ATM experiment Scanning Polychrometer-Spectroheliometer, and $100,000 in incremental funding through June 30 for ATM experiment Scanning Polychrometer-Spectroheliometer.

Sudbury -- Raytheon Co., $53,869 to expand the scope of work and extend the period of performance for data analysis and performance evaluation of the Scanning Laser Doppler System (SLDS).

Waltham -- Panametrics, Inc., $28,000 for improvements to an existing ultrasonic instrument.

MARYLAND

Silver Springs -- U. S. Department of Commerce, $60,000 for an atmospheric measuring program.

MINNESOTA

Minneapolis -- Dicomed Corp., $36,175 for an image digitizing unit with remote camera and an image dissector tube; and Honeywell, Inc., $104,255 for the design, fabrication, test and delivery of a solar collector.

MISSISSIPPI

State College -- Mississippi State University, $25,000 to expand the scope of work and extend the period of performance for a study of trends and techniques for space base electronics.

NEW JERSEY

Camden -- RCA Corp., $104,871 in incremental funding through April 15 for a space ultrareliable modular computer.

Lyndhurst -- Benedict Miller, Inc., $84,275 for ten items of alloy steel plates.

Princeton -- Econ, Inc., $149,325 for a space based solar power conversion and delivery systems study.

Teterboro -- Bendix Corp. (three contracts), $431,000 in incremental funding through July 3 for modification and logistic support of the ST-124 platform in support of ASTP, $72,800 for the study, design, fabrication and test of a multi-purpose display panel, and $99,736 for a Skylab control moment gyro anomaly investigation.

NEW YORK

Albany -- University of New York, $36,253 increase in funds for data analysis of Skylab experiment SO73.

OHIO

Columbus -- Battelle Memorial Institute, $37,425 for the design study of a photoreflective page composer.

Dayton -- University of Dayton, $45,639 for the examination of requirements and methods for reporting atmospheric information.

PENNSYLVANIA

Allentown -- Air Products and Chemicals, $216,998 for liquid hydrogen for December, 1974.

Philadelphia -- General Electric Co., $124,000 to perform evaluation and qualification testing on various types of electronic parts to determine their capability of performing in space applications and environments.

Pittsburgh -- Westinghouse Electric Co., $67,900 to amend the scope of work for ASTP experiment MA-010, "Multipurpose Electric Furnace System."

TENNESSEE

Chattanooga -- Siskin Steel & Supply Co., $31,769 for three items of carbon steel plate.

Knoxville -- University of Tennessee, $47,583 to expand the scope of work and extend the period of performance for the study, "The Application of Image Enhancement Techniques to Remote Manipulator Operation."

Nashville -- Fisk University, $25,047 to study the optional effect of the contamination of infrared windows by the outgassing of materials in outer space.

TEXAS

College Station -- Texas A&M University (two contracts), $29,993 to expand the scope of work and extend the period of performance for a study of atmospheric variability and vertical motions, and $58,000 to expand the scope of work and extend the period of performance for development of techniques to control dislocation creation during the fabrication of large scale integration arrays.

UTAH

Brigham City -- Thiokol Corp., $2,058,000 extension of the letter contract for the Shuttle Solid Rocket Motor (SRM).

VIRGINIA

Alexandria -- Essex Corp., $202,252 to expand the scope of work and extend the period of performance for the "Human Factor Design Requirements for Teleoperator" study.

Charlottesville -- Universities Space Research Association, $75,000 for the review, study and evaluation of possible flight experiments relating to material processes in space.

WASHINGTON

Pullman -- Washington State University, $33,000 to amend the scope of work and extend the period of performance for a study of the "solidification under zero gravity conditions of binary alloys exhibiting solid state immiscibility."

WASHINGTON, D. C.

Naval Research Laboratory, $400,000 in incremental funding through March 31 in support of the High Energy Astronomy Observatory (HEAO) program; and the U. S. Atomic Energy Commission, $40,000 for an integrated waste management water system using radioisotopes for the thermal energy source.

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NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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Mike Sarr, 205/453-0035
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FOR RELEASE:

Upon receipt.
Release No. 75-41

RESEARCH SLATED AT MSFC WITH LUNAR SOIL SAMPLE

MARSHALL SPACE FLIGHT CENTER, Ala. -- Research studies will be done at the NASA-Marshall Space Flight Center with a lunar soil sample which arrived Feb. 3 from the University of Toronto where Canadian scientists had used it earlier.

The program at MSFC will be conducted by James A. Fountain and Edward A. West of MSFC's Space Sciences Laboratory. The data they get will be correlated with data obtained from their previous studies on simulated lunar samples. This will augment experiments being performed by other scientists on the drill core tube samples brought back on Apollo missions.

The sample at MSFC was one of many brought back from the Moon by Astronauts David R. Scott, James B. Irwin and Alfred M. Worden of Apollo 15. Dark gray in color, weighing 9.6 grams and finely powdered, the sample came from the region of Hadley Rille near the lunar Apennine Mountains. This is the site of one of the Heat Flow Experiment probes placed on the Moon by the astronauts.

-More-

Feb. 24, 1975

Fountain and West will be measuring the thermal conductivity of the sample in a vacuum system which will simulate the lunar environment. Thermal conductivity is a fundamental property which governs the heat flow in any material, and on the Moon it is an important factor in determining the amount of heat flow through the surface.

Scientists are using this information to develop a thermophysical model of the Moon in order to understand its origin, its history and its relationship to the Earth.

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NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-42

TWO SATURN IB FINS TO BE REPLACED

MARSHALL SPACE FLIGHT CENTER, Ala. -- Two fins will be replaced on the Saturn IB launch vehicle scheduled to carry an Apollo spacecraft to rendezvous with a Soviet Soyuz in July of this year.

A recent inspection of the Saturn IB revealed a hairline crack about one inch long in two of the sixteen holddown fittings. Some of the materials that were used in construction of the Saturn IB are known to be susceptible to stress corrosion. For this reason, periodic inspections have been standard practice, and these will continue up until launch.

A crack was first noted on a fin undergoing stress corrosion checks at the Michoud Assembly Facility, New Orleans. The detailed inspection of all eight fins on the Saturn IB (210) at the NASA-Kennedy Space Center on Feb. 19, prior to the regularly scheduled inspection, resulted in the discovery of cracks on two of the eight fins in the same location.

-more-

February 25, 1975

The cracked fittings are being replaced. Marshall Space Flight Center and Chrysler engineers are also preparing a special design modification to be incorporated on the launch vehicle. This design modification will provide assurance against further problems. The cracks are in an area that would not affect the flight, but carries the weight as the vehicle sits on the mobile launcher.

Work on the Saturn IB launch vehicle is expected to be completed before the scheduled roll-out on March 24.

The changeout of the two fins and the modifications will not affect the planned July 15 launch of the Apollo Soyuz Test Project spacecraft.

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FOR RELEASE:
Upon Receipt
Release No. 75-43

ALL EIGHT SATURN IB FINS TO BE REPLACED

MARSHALL SPACE FLIGHT CENTER, Ala.--NASA officials have decided to replace all eight fins on the Saturn IB launch vehicle scheduled to carry an Apollo spacecraft to rendezvous with a Soviet Soyuz in July of this year.

Earlier this week, replacement of only two of the fins had been ordered. This resulted from an inspection which revealed a hairline crack about one inch long in two of the holddown fittings that are integral parts of the fins.

However, continuing examination by engineers of the NASA-Marshall Space Flight Center (MSFC) and its contractor, Chrysler Corporation, on two test fins for further evidence of stress corrosion cracking revealed additional cracks, and the decision was made to replace all the fins.

The replacement fins will be completely modified and re-worked, and will then be tested at MSFC prior to change-out at the NASA-Kennedy Space Center.

Modifications consist of strengthening the affected areas and surface-treating by means of rod-peening. This process places compressive stresses

in the surface of the material by pounding with a small bundle of rods, operated pneumatically like an air-hammer.

The cracks are in an area which would not affect the flight, but carries the weight of the vehicle as it sits on the mobile launcher.

NASA officials said that changeout of the fins may affect rollout of the ASTP launch vehicle, currently scheduled for March 24, but is not expected to impact the July 15 launch date. A determination as to a possible delay in the rollout should be made by March 5.

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FOR RELEASE:

Upon receipt.
Release No. 75-45

QUOTATIONS SOUGHT FOR SOLID ROCKET BOOSTER MULTIPLEXERS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a request for quotations (RFQ) for the procurement of the Space Shuttle common multiplexer/demultiplexer (MDM) for the Solid Rocket Booster.

Quotations are due March 12. A cost-plus-incentive-fee type contract is planned with a period of performance set for March 19, 1975, through Jan. 31, 1979.

The MDM is an electronic device which makes it possible to send or receive more than one (multiple) message, signal or unit of information on a single communication channel.

One MDM will be housed in but operate independently of each SRB Integrated Electronics Assembly (IEA). Each SRB will have two IEAs, one forward and one aft.

The IEAs initiate signals for various functions, such as ignition, thrust vector control, release of nose cap and frustum, jettison of Solid Rocket Motor nozzles, detachment of parachutes and turn-on of recovery aids.

-More-

March 3, 1975

The Space Shuttle will be a reusable space transportation system consisting of the Orbiter, the External Tank (ET) and two SRBs. The Shuttle is designed for multiple reuse with the ET being the only major item expendable on each mission.

The Marshall Center is responsible for development of the SRB, the ET and the Space Shuttle Main Engine (SSME).

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon receipt.
Release No. 75-46

PROPOSALS SOUGHT ON SPACE TUG THERMAL CONTROL SYSTEM

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a request for quotations from the aerospace industry for the design, development, test and delivery of a thermal control system for a Space Tug electronic component mounting panel.

Bids are due March 17 on the project which will be in four phases. A cost-plus-fixed-fee type contract is planned.

Phase I calls for analysis and trade studies of heat pipes, Phase II to design the hardware, Phase III to manufacture and Phase IV to test it.

The Space Tug, envisioned for use in the Space Shuttle program beginning about 1983, will not have a fixed orientation in space. This means that an active control system must be provided to maintain acceptable temperatures of various electronic devices.

The objective of the contract will be to develop a thermal control system using variable conductance heat pipes which will carry waste heat from an electronic component mounting panel to an external radiator.

-More-

March 4, 1975

The system must be light weight and designed for a panel with a mounting surface of about 1.4 square meters (15.07 square feet). Panel temperature must be kept within five degrees, plus or minus, of 20 degrees C (68 degrees F).

The system must also be capable of having the set point changed so that the temperature can be held within plus or minus five degrees of 5 degrees C (41 degrees F).

The Marshall Center is responsible for Tug development. The U. S. Air Force is developing an Interim Upper Stage (IUS) with less capability but which will be available to perform some Tug functions for early Shuttle flights in 1980.

The IUS and Tug are to be carried into Earth orbit in the cargo bay of the Shuttle Orbiter. There they will be used as propulsive stages to carry payloads to orbits or trajectories beyond the Shuttle's capabilities. The Tug will be reusable on most missions.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon receipt.
Release No. 75-47

PANEL ON SPACE VEHICLES TO MEET AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Panel on Space Vehicles, Research and Technology Advisory Council of the NASA Office of Aeronautics and Space Technology, will meet March 25-26 at the NASA-Marshall Space Flight Center.

The semi-annual meeting, open to the public, will have an agenda covering such general topics as "Space Vehicle Lee-Side Heating" and "Long Duration Exposure Facility" plus specific items including Space Shuttle vehicle dynamics, Shuttle main propulsion and Shuttle-747 transportation vehicle separation.

The previous panel meeting was held last September at the NASA-Johnson Space Center. Members discussed Shuttle subsystems at that meeting.

The panel is comprised of nine members who are aerospace executives and members of university staffs. The chairman is R. James Gunkel of McDonnell-Douglas Corp.

The panel serves in an advisory capacity to the NASA Deputy Administrator and Associate Administrator for Aeronautics and Space Technology.

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March 4, 1975 NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:

Upon receipt.
Release No. 75-49

LAGEOS HARDWARE INSPECTED AT ACCEPTANCE REVIEW

MARSHALL SPACE FLIGHT CENTER, Ala. -- A highlight of the recent acceptance review of the Laser Geodynamic Satellite (LAGEOS) project was the visual inspection of the actual flight hardware at the NASA-Marshall Space Flight Center.

The meeting was attended by personnel from MSFC, NASA Headquarters, Goddard Space Flight Center, McDonnell Douglas Corp.-Western Div., and scientific advisors from the Smithsonian Astrophysical Observatory.

The LAGEOS project, part of the Earth and Ocean Physics Applications Program (EOPAP) being conducted by the NASA Office of Applications, is being managed by the Marshall Center.

LAGEOS is a completely passive satellite weighing approximately 411 kilograms (903 pounds) which will demonstrate and employ the capability of laser satellite tracking techniques to make accurate determinations of the Earth's crustal and rotational motions.

One important benefit foreseen in being able to acquire information on these crustal and rotational motions could be the development of techniques for predicting earthquakes.

-More-

March 6, 1975

Scheduled for launch early in 1976, LAGEOS will carry an array of corner-cube retroreflectors 3.81 centimeters (1.5 inches) in diameter which are recessed 1.0 millimeter (0.04 inch) into the satellite's surface.

Designed such that range measurements between ground stations are possible within an accuracy of 2 centimeters (0.78 inch), LAGEOS will be placed in a retrograde orbit of 5,900 kilometers (3,540 miles) with an inclination of 110 degrees to the Equator.

The altitude is high enough to facilitate simultaneous observations between stations separated by intercontinental distances.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-50

CONTRACT AWARDED FOR ELEMENT OF X-RAY TELESCOPE TEST FACILITY

MARSHALL SPACE FLIGHT CENTER, Ala. -- A contract for design, fabrication, delivery, installation and checkout of an optical bench and alignment system for an X-ray telescope test facility at the NASA-Marshall Space Flight Center (MSFC) has been awarded to the Perkin Elmer Corp., Boller and Chivens Division, South Pasadena, Calif.

The contract was in the amount of $334,100.

The test facility will be used initially for X-ray verification testing and calibration of X-ray mirrors, telescope systems and instruments for NASA's High Energy Astronomy Observatory (HEAO) program.

The HEAO project will include the launch of three unmanned scientific satellites into low circular Earth orbit between 1977 and 1979 to study some of the most intriguing mysteries of the universe -- black holes, neutron stars, quasars and supernovae. The program is being managed for NASA's Office of Space Science by the Marshall Center.

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March 17, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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Residence, 205/852-1763

FOR RELEASE:
Upon receipt.
Release No. 75-53

TWO CONTRACTS ISSUED FOR LIFE SCIENCES LAB STUDIES

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued two contracts for parallel studies aimed at defining Life Sciences laboratories for research in Spacelab that will benefit man both on the Earth and in space.

A contract for $199,500 went to General Dynamics, Convair Div., of San Diego, and one for $199,333 to McDonnell Douglas Astronautics Co. of Huntington Beach, Calif.

Spacelab is to be carried to and from Earth orbit in the cargo bay of the reusable Shuttle Orbiter. Spacelab is being built in Europe as a carrier of various types of scientific experiments. Shuttle flights are to begin in 1980.

The nine-month studies are for concept definition of Life Sciences labs for manned Spacelab missions.

Three types of lab configurations will be considered: Dedicated Lab, a total unit on Spacelab dedicated to Life Sciences research; Mini-Labs, high-capability Life Sciences labs configured to share a part of a Spacelab with units for other disciplines, such as Earth resources and materials processing; and Carry-On Labs, units small enough to be carried aboard the Orbiter for the study of specific Life Sciences problems.

-More-

Each of these three types of labs will be designed to accommodate experiments for a wide variety of life forms such as: cells and tissues; plants and vertebrates, such as laboratory rats and other animals; and man himself.

The goal is to develop a set of equipment suited to a variety of Spacelab payloads. The different size labs will provide the flexibility to perform a wide range of research programs in the Life Sciences area using the Shuttle/Spacelab. This follows the Spacelab "module" concept.

The equipment is to be designed for reuse during a 12-year period of Space Shuttle operations.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

75-54?

PROPOSALS SOUGHT FOR DESIGN STUDY OF SPECIMEN HABITATS FOR SPACELAB

MARSHALL SPACE FLIGHT CENTER, Ala. -- Requests for Quotations (RFQ) have been issued by the NASA-Marshall Space Flight Center to 31 aerospace firms for a conceptual design study for a biological specimen holding facility.

Proposals are due March 26 on the nine-month study effort. MSFC currently contemplates awarding contracts to two firms for parallel studies.

The study is expected to result in the conceptual design of habitats to be carried in Spacelab to house and maintain live biological specimens to support Life Sciences space flight research programs.

The habitats are to be suitable for a wide variety of specimens but the emphasis will be on the adult rhesus monkey and the adult laboratory rat. The recommended concept will include a design for both restrained and unrestrained specimens.

-more-

March 21, 1975

Minimizing physiological changes and stress in the specimens will be a prime criterion in developing the habitat design.

The habitats will be designed to interface physically and environmentally with the Spacelab. The study will consider the use of standard Spacelab racks and mounting facilities.

Basically, the habitat will consist of the structure and the environmental control, food and watering, waste management, lighting and specimen instrumentation systems.

The Spacelab, capable of accommodating many different scientific disciplines, is a pressurized laboratory being built by the European Space Research Organization for use on Space Shuttle flights. The reusable Spacelab will be carried to and from Earth orbit in the cargo bay of the Shuttle Orbiter.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:

March 25, 1975
Release No. 75-55

Also Released at
NASA Headquarters

FIRST SPACE SHUTTLE ENGINE COMPLETED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Rocketdyne Division of Rockwell International at Canoga Park, Calif., completed fabrication of the first main engine of the Space Shuttle today, a month ahead of schedule.

The first engine is not destined for flight. It is to be used in static firing tests at the National Space Technology Laboratories (NSTL) in Hancock County, Miss.

The NASA-Marshall Space Flight Center is responsible for development of the Space Shuttle Main Engine (SSME), the External Tank (ET) and the Solid Rocket Booster (SRB) for the Shuttle.

Known as the Integrated Subsystems Test Bed (ISTB) engine, the unit is to be shipped in mid-week to NSTL where firings are now scheduled to begin in May.

-more-

The SSME is the most advanced liquid-fueled rocket engine ever built. It is designed for multiple reuse, operating at high pressures for more efficiency than possible in previous engines.

It also has a digital computer, called a controller, which provides automatic control and enables the engine to check itself on key operations.

The engine will produce more than 2,090,000 Newtons (470,000 pounds) thrust burning liquid hydrogen and liquid oxygen.

Three of the engines will power the Orbiter, which will be launched vertically like a rocket but will return to Earth to land horizontally like an airplane.

The engines are designed for use on up to 55 missions between overhauls.

Maintenance between missions will be done using techniques similar to those practiced by commercial airlines. The reusability feature of the Shuttle is designed to reduce the cost of space travel in the 1980s and beyond.

Assembly of the ISTB began Feb. 24 and reached completion March 13. Checkout for key operations was done automatically by the engine's controller.

A controller will be mounted directely on each engine in the flight configuration. However, the controller for the ISTB is to be mounted nearby for the test program.

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Single engines are to be tested on Test Stands A-1 and A-2 at NSTL, formerly used for testing the second stage of the Saturn V vehicle. The cluster of three engines in the "boattail" configuration, which simulates the aft end of the Orbiter, will be tested on a nearby stand that was used in the 1960s for testing the Saturn V first stage.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
Upon Receipt
Release No. 75-56

CONTRACT EXTENSIONS GRANTED ON LARGE SPACE TELESCOPE

MARSHALL SPACE FLIGHT CENTER, Ala.--Contract extensions have been granted by the NASA-Marshall Space Flight Center to two industrial firms conducting competitive preliminary design and program definition studies for the Large Space Telescope (LST) Optical Telescope Assembly and Scientific Instruments.

Planned as a payload of the Space Shuttle in the early 1980's, the LST will be a general-purpose optical telescope for use in Earth orbit, unhindered by atmospheric distortion.

The 14-month contract extensions, valued at $700,000 each, were awarded to the Optical Systems Division of the Itek Corp., Lexington, Mass., and the Perkin Elmer Corp., Norwalk, Conn.

Because of its large size, high quality and location above the atmosphere, the LST will be able to resolve objects seven times smaller and 50 times fainter than those observed by ground-based telescopes.

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NASA—MSFC

March 24, 1975

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:

Upon Receipt
Release No. 75-57

CONTRACTS AWARDED BY MSFC IN FEBRUARY ANNOUNCED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) during February awarded the following contracts of $25,000 or more:

ALABAMA

Birmingham -- Hinkle Supply Co. Inc., $31,999 for two items of stainless steel and three items of aluminum.

Huntsville -- Brown Engineering Co. (two contracts), $100,000 incremental funding through Feb. 28 for engineering support services and $800,000 for engineering support services; Computer Services Corp., $1,031,168 for computation support services; General Electric Corp., $600,000 incremental funding through Apr. 15 for logistic support of launch vehicle ground support equipment for the Apollo Soyuz Test Project (ASTP); Hewlett-Packard Co. (two contracts), $32,405 for a magnetic storage system for the Computer Services Office and $36,074 for accessories for a government-owned Hewlett-Packard 9601B measurement and control system.

-more-

March 24, 1975

IBM Corp., $70,250 for a computer study; Lockheed Missiles and Space Co. Inc. (two contracts), $149,856 for a solid rocket motor study in support of Shuttle and $106,060 for testing of the laser doppler system at Kennedy International Airport; Management Services, $60,000 incremental funding through Mar. 12 for operation and maintenance of government-owned aircraft; M&S Computing, Inc., $52,682 for a laser doppler vortex tracking system at Kennedy International Airport; Northrop Services, $256,000 incremental funding through Feb. 28 for mission support services and Planning Research Corp., $177,000 incremental funding through Mar. 14 for engineering support services.

Remtech Inc. (two contracts), $49,977 to expand the scope of work and extend the period of performance for a Shuttle Orbiter analysis and $46,729 for a Solid Rocket Booster study; Sperry Rand Corp., $485,000 incremental funding through Mar. 14 for engineering support services; and the University of Alabama, $45,000 for a solar physics study and analysis of data of Apollo Telescope Mount (ATM) experiment SO56.

ARIZONA

Phoenix -- Garrett Corp./AiResearch Mfg. of Arizona, $72,223 for the design, fabrication, testing and delivery of a thermal control-mixing control valve.

Tuscon -- University of Arizona, $65,440 for a study on the replacement of optics for the NASA 1.5-meter telescope.

CALIFORNIA

Canoga Park -- Quelex Data Systems Inc. (two contracts), $60,850 for two items of simulation components and $48,727 for computer equipment and installation in the Computer Services Office; and Rockwell International Corp., Rocketdyne Div. (four contracts), three contracts totaling $439,780 for change orders and additional manhours on the Space Shuttle Main Engine (SSME); and $45,850 for operational, flight and associated support for Saturn engines through Oct. 31, 1974.

Downey -- Rockwell International Corp., $78,750 for a Shuttle payload study.

Huntington Beach -- McDonnell Douglas Corp. (three contracts), $73,520, the fee earned through Nov. 30, 1974, for the S-IVB or second stage of the Saturn IB launch vehicle for the Apollo Soyuz Test Project (ASTP), $584,915 incremental funding through May 14 for the S-IVB stage in support of the ASTP, and $199,333 for a Shuttle/Spacelab study.

Irvine -- International Biophysics Corp., $29,843 for a spacecraft particle monitoring system and its electronics subassembly.

Los Angeles -- University of Southern California, $25,000 for a space processing applications study.

Pasadena -- California Institute of Technology, $59,946 for research on the Space Shuttle Main Engine (SSME).

-more-

Redondo Beach -- TRW Inc., TRW Systems Group, $50,000 for an Atmospheric, Magnetospheric, Plasmas in Space (AMPS) study; and TRW Inc., $40,000 for an AMPS study.

San Diego -- General Dynamics Corp. (two contracts), $200,000 for additional work on a Shuttle system payload study, and $199,500 for a Shuttle/Spacelab study.

San Jose -- Lakewood Computer Corp., $25,300 to refurbish two Xerox units.

Santa Ana -- ITT Cannon Electric, $63,238 for additional line items of electrical connectors for the High Energy Astronomy Observatory (HEAO).

Sunnyvale -- Lockheed Missiles, $49,997 for the advanced development of a Structural Performance Analysis and Redesign (SPAR) computer program.

COLORADO

Denver -- Martin Marietta Corp. (three contracts), $261,000 incremental funding through Mar. 25 for Skylab systems engineering and integration, $39,378 for a Spacelab study, and $34,312 for Skylab data analysis.

CONNECTICUT

Norwalk -- Perkin-Elmer Corp. (two contracts), $700,000 for a Large Space Telescope (LST) study, and $60,000 to amend the scope of work for fabrication and testing of retroreflectors for the Laser Geodynamic Satellite (LAGEOS).

Stamford -- CBS Laboratories, $27,715 for a CBS Laboratories Minicam camera system.

GEORGIA

Atlanta -- Georgia Institute of Technology, $54,967 for a study on a laser scanner for 35-millimeter (mm) film.

IOWA

Cedar Rapids -- Rockwell International - Collins Radio Group, $49,744 for spare parts to support NASA aircraft at Langley Research Center.

Davenport -- Bendix Corp., $34,835 for the design, development, manufacture and delivery of a guidance and control system.

LOUISIANA

New Orleans -- Martin Marietta, three contracts totaling $4,420,000 for additional line items of facilities for the Space Shuttle External Tank (ET).

MASSACHUSETTS

Cambridge -- American Science & Engineering Inc., $355,000 funding through June 30 for High Energy Astronomy Observatory (HEAO) experiment hardware; Harvard College, $192,759 on an Apollo Telescope Mount (ATM) experiment; Massachusetts Institute of Technology, $75,000 for a space processing applications study; and the Smithsonian Institution, $100,000 funding through Mar. 21 for the Gravitational Redshift Space Probe experiment and preliminary design support for the High Energy Astronomy Observatory (HEAO).

Lexington -- Itek Corp., $700,000 for a Large Space Telescope (LST) study.

MICHIGAN

Ann Arbor -- Bendix Corp., $130,000 for Laser Geodynamic Satellite (LAGEOS) analyses and testing.

MISSOURI

Columbia -- University of Missouri, $26,909 for a Spacelab study.

NEW JERSEY

Teterboro -- Bendix Corp., $113,988 for the design, fabrication, testing and delivery of five cathoid ray tube multi-function display systems and two sets for a Data Systems Laboratory.

NEW YORK

Bethpage -- Grumman Aerospace Corp., $86,500 for a Spacelab study.

OHIO

Columbus -- Ohio State University Research Foundation, $55,440 for work on a Close Grid Geodynamic Satellite (CLOGEOS) study.

PENNSYLVANIA

Allentown -- Air Products & Chemicals, $225,618 for liquid hydrogen for January.

Philadelphia -- General Electric, $200,000 funding through May 15 for an electropheretic separator for an Apollo Soyuz Test Project (ASTP) experiment.

TENNESSEE

Johnson City -- Environmental & Regional Research Associates Inc., $34,336 to develop photomorphic analysis techniques to interpret Skylab and Earth Resources Technology Satellite (ERTS) photographic data.

Nashville -- Vanderbilt University, $35,694 for a space processing applications study.

TEXAS

San Antonio -- Kelly Air Force Base (three contracts), $36,000 for supplies of nitrogen, $1,000,000 for propellants and ancillary gases in support of the Space Shuttle Main Engine (SSME), and $200,000 for propellants and pressurants for all programs.

UTAH

Brigham City -- Thiokol Corp., $2,955,000 for an extension of the letter contract through Mar. 31 for Shuttle Solid Rocket Motor (SRM).

Salt Lake City -- University of Utah, $49,622 for a space processing applications study.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
Upon Receipt
Release No. 75-58

NASA CENTER DIRECTORS TO MEET AT MARSHALL CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- Directors of all NASA centers and field installations are meeting today and tomorrow (Mar. 25-26) at the NASA-Marshall Space Flight Center (MSFC). Dr. William R. Lucas, MSFC director, welcomed the group to the Marshall Center this morning.

The meeting, called periodically by the NASA Headquarters associate administrator for Center Operations, is the first to be held at MSFC since initiation of the meetings more than a year ago. Its purpose is to discuss generally the various centers' programs, progress and problems.

The NASA Headquarters contingent includes Dr. George M. Low, deputy administrator, Dr. Rocco Petrone, NASA associate administrator and former MSFC director, and Elmer S. "Todd" Groo, associate administrator for Center Operations, who will chair the meeting.

Center directors, or their representatives, attending the meeting are: Former astronaut David R. Scott, acting director, Flight Research Center, Edwards, Calif.; Dr. John F. Clark, director, and Donald Hearth, deputy director, Goddard Space Flight Center, Greenbelt, Md.;

-more-

March 25, 1975

Oran W. Nicks, deputy director, Langley Research Center, Hampton, Va.; Miles Ross, deputy director, Kennedy Space Center, Fla.;

Dr. Christopher C. Kraft, director, Johnson Space Center, Houston, Texas; Bruce T. Lundin, director, Lewis Research Center, Cleveland, Ohio; Dr. Hans M. Mark, director, Ames Research Center, Moffett Field, Calif.; Robert L. Krieger, director, Wallops Flight Center, Wallops Island, Va.; and Dr. William H. Pickering, director, Jet Propulsion Laboratory, Pasadena, Calif.

The agenda will include a brief tour of Marshall Center facilities and selected presentations on MSFC technical activities. The meeting will adjourn at 4:30 p.m. Wednesday, with concluding remarks by Groo.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-61

KINGSBURG NAMED DIRECTOR OF SCIENCE AND ENGINEERING AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- James E. Kingsbury today was named director of Science and Engineering at the NASA-Marshall Space Flight Center (MSFC), it was announced by Dr. William R. Lucas, center director.

Leland F. Belew was named deputy director of Science and Engineering. Both appointments are effective April 1.

Kingsbury and Belew are veteran members of the Marshall Center and its predecessor organizations, both having joined the rocket development group here in 1951.

The Science and Engineering (S&E) directorate is the Marshall Center's in-house research and development organization, consisting of eight laboratories and two offices. It has about 2,400 employees.

Kingsbury, 47, replaces Richard G. Smith, who last November was appointed deputy director of the center and has since that time served additionally as acting director of Science and Engineering. Kingsbury has been serving as S&E associate director for engineering.

-more-

March 31, 1975

Belew, 50, has previously served as S&E deputy director for operations, a position which is now abolished.

In addition to his new position, Kingsbury for the present will continue to serve as S&E associate director for engineering, on an acting basis.

Both Kingsbury and Belew transferred from the Army Ballistic Missile Agency to the Marshall Space Flight Center when the center was formed in 1960. They have served in a number of progressively more responsible positions at MSFC through the years. Their new assignments are made pending formal approval from NASA Headquarters.

Born in Wilkes-Barre, Pa., Kingsbury received a bachelor of science degree in electrical engineering from Pennsylvania State University. Married to the former Alma Brookshire of Guntersville, Ala., Kingsbury and his wife have two children.

A native of Missouri, Belew served in the U. S. Army from 1943 to 1946, and received a bachelor of science degree in mechanical engineering from the University of Missouri-Rolla in 1950. He is married to the former Jerena Scheidemantel and the couple has two children.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:
Upon Receipt
Release No. 75-62

PROPOSAL SOUGHT FOR SHUTTLE BOOSTER APU

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a single-source request for proposal for procurement of the Auxiliary Power Unit (APU) for the Space Shuttle Solid Rocket Booster's thrust vector control subsystem (TVC).

The Sunstrand Corp., of Rockford, Ill., has been asked to submit a proposal for the design, development, manufacture, test and delivery of APU's, related documentation and technical and logistical support.

The APU will include a gas generator (which uses liquid hydrazine fuel), turbine, gearbox, fuel pump, electrical controls, control valves, instrumentation, mounting system, and the mechanical and electrical connections required to interface with the other SRB subsystems.

Two APU's, each driving a hydraulic pump, will be used during the pre-launch and ascent phases of Shuttle flight to provide hydraulic power to the TVC subsystem of each Booster.

-more-

April 1, 1975

Two SRBs will be used on each Shuttle flight. The SRB's will be jettisoned at an altitude of about 43.5 kilometers (27 miles) and be recovered through the use of a parachute recovery system for refurbishment and reuse on subsequent Shuttle flights.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

FOR RELEASE:

Curtis Hunt, 205/453-0035
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Upon receipt.
Release No. 75-63

SPACELAB TUNNEL CONCEPT BEING TESTED AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- An early concept of a flexible tunnel designed for Spacelab flights on Space Shuttle missions in the 1980s is being tested at the NASA-Marshall Space Flight Center.

A tunnel will connect the Space Shuttle Orbiter's airlock with the forward end of the Spacelab to provide a pressurized passageway for crew members and scientists.

Using a pressurized tunnel, personnel can move to and from the orbiting space laboratory without having to don pressurized space suits. The present plan is to use a rigid tunnel with flex sections.

This flexible tunnel, built by Goodyear Rubber Corp. of Akron, O., folds accordion-like to a length of only two feet but extends to a length of up to 14 feet 8 inches. It is four feet in diameter inside.

Steel rings keep the tunnel circular and steel cables extend and compress it as needed.

-More-

April 1, 1975

The airtight "bladder" is made of layers of aluminum foil, Capran film and nylon cloth. The outside is covered by a spongy meteoroid shield and nylon cloth.

When the Orbiter's payload bay doors are open, the transfer tunnel and the Spacelab will be exposed to the space environment, including vacuum, the low temperatures of space in shade, the high heat of the Sun on the sunlit side, and possibly meteoroids.

Engineers in the Structures Test Branch of the Marshall Center's Test Laboratory are checking the tunnel for structural strength and airtight integrity and for materials compatibility to provide data for the latest design concept.

The Spacelab is being built in Europe as a payload for Orbiter's cargo bay. It will be used repeatedly as a space laboratory for a variety of experiments.

The Marshall Center is NASA's lead center for Spacelab development. Prime contractor for Spacelab is ERNO-VFW-Fokker of Bremen, Germany, under the direction of the European Space Research Organization (ESRO).

A modular concept is being followed in development of Spacelab. This permits quick removal of one set of experiment equipment after a mission and installation of another set.

Spacelab and Space Shuttle are being designed with consideration for passengers other than astronauts. Scientists, both men and women, will be able to accompany their experiments into space.

Experiments envisioned for Spacelab are in life sciences, materials research, Earth resources, medical and other fields.

-More-

The Marshall Center has a Concept Verification Testing (CVT) program under way in which concepts for experiments and equipment are tried in a General Purpose Laboratory (GPL) about the same size and shape as the Spacelab.

A number of experiments and sets of equipment have been checked in the ground-based GPL with a view to developing equipment and experiment procedures for Spacelab use.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:
Upon Receipt
Release No. 75-64

BIDS INVITED ON MATERIALS PROCESSING FACILITY FOR SOUNDING ROCKETS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) has issued a request for quotations from the aerospace industry for the development of a high-temperature materials processing facility for use on sounding rockets. Quotations are due April 14.

The work will be a three-phase, 18-month effort under a planned cost-plus-fixed-fee contract.

The contract is expected to include the design, fabrication, test and delivery of a non-flight engineering model and a flight version of the materials processing facility for use on Black Brant VC sounding rockets.

Principal element of the facility will be a furnace system capable of processing a wide variety of materials in the general field of crystal growth, glass processing, and metals melting and solidification.

Additional elements include an automatic control system, a heat removal mechanism, a sample quench system that will isothermally cool test specimens at various cooldown rates, and a thermal monitoring system compatible with sounding rocket telemetry to provide furnace performance and sample growth rate data throughout the processing cycle.

-more-

Two types of high-temperature furnace--isothermal and gradient freeze--will be developed during the first two phases of the contract effort. A choice of one of these will be made before initiation of the third phase, during which the contractor will fabricate and test a furnace system for flight on sounding rockets.

Experiments in space processing of materials are to be conducted aboard sounding rockets by NASA at the rate of three flights per year from 1975 through 1980. The launch vehicles, Black Brant VC rockets, are to be fired from the Army's White Sands Missile Range in New Mexico to provide up to six minutes of low gravity during the coast phase of each flight. Scientific payloads will be recovered by parachute for ground analysis.

The Marshall Center is managing the project for NASA's Office of Applications. The Goddard Space Flight Center will provide launch and payload recovery services.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
For Receipt
Release No. 75-65

FLIGHT SUPPORT OPERATIONS FOR APOLLO SOYUZ SET AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- Flight support operations for the Apollo Soyuz Test Project (ASTP), the joint U.S. - Soviet manned space mission scheduled for mid-July, will be conducted by the NASA-Marshall Space Flight Center (MSFC) using its Launch Information Exchange Facility (LIEF).

The LIEF serves as a communications link between MSFC, the NASA-Kennedy Space Center (KSC) and the NASA-Johnson Space Center (JSC). It makes MSFC's expertise--and that of its contractors--readily available to the other two centers where the launch is conducted and the mission is controlled, respectively.

For the ASTP mission, Marshall's design experts will be standing by with detailed information and technical direction for use as needed.

Using LIEF, the Marshall Center will contribute to the mission in three areas:

Launch of the Saturn IB vehicle--provided by MSFC--which will carry three U.S. astronauts into Earth orbit.

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April 3, 1975

Rendezvous and docking of the astronauts' Apollo spacecraft with the Russian Soyuz spacecraft (carrying two Soviet cosmonauts).

And de-orbiting of the Saturn IB's spent upper stage (S-IVB) and instrument unit (IU) some six hours after launch.

The LIEF encompasses the Marshall Center's Huntsville Operations Support Center (HOSC) where data from KSC and JSC is processed and displayed for the benefit of MSFC engineers and includes both voice and data lines to the two centers.

The HOSC will support Saturn IB pre-launch activities, such as the Countdown Demonstration Test and Flight Readiness Test, as well as the launch itself on July 15.

The Saturn IB launch will occur seven and one-half hours after the Soviet launch. Once the Soyuz is in orbit, JSC will generate a "target-load"--a set of conditions which must be fed into the Saturn IB instrument unit to assure a proper "burn" to a point in space at which Apollo can successfully rendezvous with the Russian spacecraft.

At Marshall's HOSC, a Target Update Team is responsible for verifying that the Saturn IB has the propulsive capability of meeting its target in orbit.

The first communications activity in preparation for the July mission was conducted recently--A Joint Countdown Simulation in which the Russians staged a simulated launch and fed JSC a target vector indicating the exact location of the Soyuz.

JSC in turn generated a target load for Saturn 1B and relayed it to HOSC, where it was used to simulate or compute a trajectory to the desired target point.

In the S-IVB/IU de-orbit operation, HOSC engineers will perform analysis to assure that the upper stage has the propulsive capability to "kick" itself out of orbit, define the de-orbit maneuver sequence times, and provide the proper commands to JSC to command the S-IVB/IU for return to Earth in a planned safe impact area.

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NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
Upon Receipt
Release No. 75-66

INDUSTRY BRIEFING SLATED ON CLOUD PHYSICS PAYLOAD

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center will conduct an industry briefing May 1 to present plans for a forthcoming preliminary design study of the Zero Gravity Atmospheric Cloud Physics payload.

The cloud physics payload is planned for flight on the first Space Shuttle mission.

Registration for the briefing will begin at 9 a.m. The briefing, expected to last about two hours, will cover past study results, science objectives, current design concepts and supporting technology activities.

Industry representatives planning to attend should contact Robert W. Parks, Mail Code PA01S, Marshall Space Flight Center, Ala., 35812, no later than April 25. Agenda and briefing material will be available at the meeting.

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April 3, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:

Upon receipt.
Release No. 75-68

FIRST SHUTTLE GROUND TEST HARDWARE ARRIVES AT MARSHALL CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- The first piece of Space Shuttle flight-like hardware has arrived at the NASA-Marshall Space Flight Center where it will undergo functional checkout during the next several weeks.

A ground test hydraulic actuator for the Space Shuttle Main Engine (SSME) is now in a test rig where engineers of the Electronics and Control Laboratory will put it through its paces.

Two actuators will be used on each SSME to gimbal the engine for thrust vector (steering) control. The Shuttle Orbiter has three SSMEs.

After tests at the Marshall Center, the actuator will be shipped to the National Space Technology Laboratories (NSTL) in Hancock County, Miss., where SSMEs will be tested.

MSFC will receive seven more of the actuators. All eight will go through some test at MSFC, such as functional and acceptance testing. Two of the units will undergo complete qualification testing at MSFC.

Three of the eight engine actuators will be shipped to NSTL to support the ground test program for the SSME. The remaining units

-More-

will be used in the actuator development test program.

The Marshall Center is responsible for development of the SSME, the External Tank (ET) and the Solid Rocket Booster (SRB).

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NOTE TO EDITORS: Marshall Space Flight Center photograph number 565802 showing the hydraulic actuator is available on request.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

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FOR RELEASE:
Upon receipt.
Release No. 75-69

BIDS SOUGHT ON TANK CONSTRUCTION PROJECT AT MAF

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued an invitation for bids on construction of a 500,000-gallon fuel oil storage tank at the Michoud Assembly Facility, New Orleans.

The tank will hold fuel oil to be used for operating Michoud's central steam plant.

Sealed bids are due by 1 p.m. on April 28. Prospective bidders may telephone Marvin Green at New Orleans, 504-255-2583, to arrange a time and date for investigation of the construction site.

Work under the contract is to be completed within 720 calendar days and is to include: Site preparation; fill from off-site; installation of the tank, fuel oil pump and piping system; seeding and sodding; and installation of a steam heating coil in the tank.

Firms interested in bidding on the project should telephone the issuing official, H. G. Amburn, at the Marshall Center, 205-453-2839.

The Michoud facility is a satellite organization of the Marshall Center.

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NASA—MSFC

April 10, 1975

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
Release No. 75-70

PROPOSALS SOUGHT FOR BOOSTER SEPARATION MOTORS (BSM) DEVELOPMENT

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a request for proposals for the design and development of separation motors for the Space Shuttle Solid Rocket Booster (SRB) with proposals due May 5. A firm-fixed-price type contract is planned for the project with a period of performance running from Aug. 25, 1975, through June 30, 1980.

The contract will cover design, development, fabrication, test, inspection, checkout and delivery of hardware required for the first six design, development, test and evaluation flights of the Shuttle. It will also include support equipment and tooling, mockups and other hardware.

Two SRBs will be used on each Shuttle launch. Each SRB will have eight booster separation motors (BSM), four in the nose cone and four near the aft end, which will fire after separation of the SRB from the External Tank (ET) upon SRB burnout at an altitude of about 43.5 kilometers (27 miles).

-more-

April 10, 1975

Each BSM will consist of a motor case, nozzle, igniter, initiator, liner, propellant and instrumentation.

Four mockups are to be delivered to the Marshall Center by April 30, 1977, and the first flight motors are to be shipped to the NASA-Kennedy Space Center by Aug. 30, 1978.

The Marshall Center is responsible for development of the SRB, ET and Space Shuttle Main Engine (SSME).

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
Residence, 205/561-3559

FOR RELEASE:
Upon Receipt
Release No. 75-72

HEAD OF EUROPEAN SPACELAB PROGRAM TO VISIT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The recently appointed head of the European Space Research Organization's (ESRO) Spacelab Program, Bernard Deloffre, will visit the NASA-Marshall Space Flight Center (MSFC) April 15 as part of a familiarization tour of Spacelab activities in the United States. He will be welcomed to the center by Dr. William R. Lucas, director.

A graduate of Ecole Polytechnique France where he received a higher engineering degree, Deloffre was the project co-manager for the French-German Symphonie Satellite which was launched Dec. 18, 1974, from Kennedy Space Center. He was also a member of the French space agency, Centre National d'Etudes Spatiales.

His previous work included an assignment at the French launching range, Hammaguir, in the Sahara Desert where he was responsible for the design, installation and operation of all optical tracking systems, and as deputy director and director of the Kourou launching range in French Guyana.

-more-

April 11, 1975

During his visit to MSFC, Deloffre will be briefed on Marshall Center's Spacelab activities by T. J. Lee, manager, and will later visit the Concept Verification Test facilities. He will also tour the Skylab mockup.

Deloffre's itinerary while in the United States includes NASA Headquarters, Johnson Space Center and the Space Division of Rockwell International at Downey, Calif., where the Shuttle Orbiter is being developed.

The Spacelab is being built in Europe under direction of ESRO as a space laboratory to be used in a variety of experiments. It will be carried to and from Earth orbit in the cargo bay of the Space Shuttle.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0035
Residence, 205/852-1763

FOR RELEASE:

Upon receipt.
Release no. 75-73

BIDS REQUESTED FOR AIRCRAFT PARKING FACILITY

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued an invitation for bids on constructing an aircraft fueling facility and aircraft parking area at nearby Redstone Airfield.

Bids, to be accepted from small businesses only, are due by 1:30 p.m. on April 29. The project is to be completed within 150 days of contract award date.

The work will consist of: clearing, grubbing and grading; removal of some existing equipment; installation of aircraft fuel lines and storage vessels; bituminous and concrete paving; sprigging and sodding; and installation of government-furnished property.

Firms interested in submitting bids may arrange to inspect the site by contacting Paul McQueen of the MSFC Facilities Office, telephone 205-453-2680.

Business concerns needing further information should contact H. G. Amburn, the bid invitation issuing official, by calling 205-453-2839.

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April 14, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

FOR RELEASE:

Don Worrell, 205/453-0035
Residence, 205/881-0909

Upon receipt.
Release No. 75-75

MSFC DIRECTOR TO ADDRESS MATH STUDENTS

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. William R. Lucas, director of the NASA-Marshall Space Flight Center, will address the Alabama convention of Mu Alpha Theta at Oak Park School in Decatur, Ala., at 7:30 p.m. Friday, April 18.

Mu Alpha Theta is a national organization of outstanding high school and junior college mathematics students. About 500 students and teachers from over Alabama are expected to attend this two-day meeting, according to Mrs. Eva Nell Hunter, a sponsor at Decatur High School.

Dr. Lucas will discuss the role of technology in today's society and describe the main work of the Marshall Space Flight Center, particularly the development of the reusable Space Shuttle and associated spacecraft.

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April 15, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 75-76

Corrected Version

MSFC REQUESTS PROPOSALS ON INSTITUTIONAL SUPPORT SERVICES

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) has issued a request for proposals for institutional support services to the MSFC Administration and Program Support directorate. Proposals are due by June 9.

The planned cost-plus-award-fee contract will provide support by industry for: telecommunications services, documentation repository services, and graphics, models and exhibits services.

The contract will be awarded after all proposals have been considered by a source evaluation board.

A pre-proposal conference will be held at the Marshall Center on April 23, 1975. The conference will begin at 9 a.m. CDT in Morris Auditorium in the MSFC Headquarters building.

Included in the pre-proposal conference will be a tour of facilities applicable to the contract and sessions later to provide briefings and answers to written inquiries.

Industrial firms needing further information should telephone John R. Tribble at 205-453-4321. Inquiries should be submitted in writing to Tribble at Mail Code AP22, Marshall Space Flight Center, Ala. 35812.

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April 18, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0035
Residence, 205/852-1763

FOR RELEASE:

Upon receipt.
Release No. 75-77

PROPOSALS SOUGHT FOR SRB SERVOACTUATORS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued a request for proposals aimed at providing thrust vector control (TVC) electro-hydraulic servoactuators for Space Shuttle Solid Rocket Boosters (SRBs). Proposal due date is May 19.

The planned cost-plus-incentive-fee/award-fee type contract will call for design, development, manufacture, qualification and delivery of the servoactuators in support of the Design, Development, Test and Evaluation (DDT&E) phase of the Space Shuttle program.

Two SRBs will be used on each Shuttle flight and recovered from the ocean for reuse. The nozzle of each SRB is gimballed to provide thrust vector (steering) control during ascent toward Earth orbit. The servoactuator will gimbal the nozzle.

No pre-proposal conference is planned but written questions concerning the project may be submitted to D. W. Cornelius, Mail Code AP44, Marshall Space Flight Center, Ala. 35812.

The Marshall Center is responsible for development of the SRB, the Space Shuttle Main Engine (SSME) and the External Tank (ET) which will hold the liquid oxygen and liquid hydrogen propellants burned by the Orbiter's three SSMEs.

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April 18, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0035
Residence, 205/852-1763

FOR RELEASE:

Upon receipt.
Release No. 75-79

See June 3, 1975
W. Post 6/5/75
B-2

ROCKET TEST FIRINGS TO RESUME IN MISSISSIPPI

MARSHALL SPACE FLIGHT CENTER, Ala. -- Rocket test firings will resume at the National Space Technology Laboratories in Hancock County, Miss., late next month after a lapse of several years.

The first Space Shuttle Main Engine (SSME), a test version, has been installed in Test Stand A-1, which has just been activated following modifications.

Checkout of all systems and the Test Control Center is now underway in preparation for the first engine checkout test scheduled for late May.

The first engine is known as the Integrated Subsystem Test Bed (ISTB). It was completed March 25 by the Rocketdyne Division of Rockwell International Corp. about a month ahead of schedule and shipped by truck from the Canoga Park, Calif., plant to NSTL. Rocketdyne is prime contractor to the NASA-Marshall Space Flight Center for development of the SSME. The ISTB will be fired numerous times in the SSME test program.

Test Stand A-2 is now being modified, also to support single SSME testing. Stands A-1 and A-2 were used in the 1960s to test fire second (S-II) stages of the Saturn V launch vehicle.

-More-

April 22, 1975

Saturn V first (S-IC) stages were tested on a third stand nearby. That stand is now being modified for testing the Main Propulsion Test (MPT) article. This will consist of three SSMEs mounted on a Shuttle Orbiter "boattail" section which will be mounted next to an External Tank (ET), thus simulating the ET/Orbiter configuration. A series of tests will be conducted with the MPT article.

The SSME is the most advanced liquid fueled rocket engine ever built. It is designed for reuse up to 55 times between overhauls. Its nominal burn time is eight minutes with a lifetime of 7.5 hours.

The SSME will burn liquid hydrogen and liquid oxygen and will produce up to 1,090,650 Newtons (470,000 pounds) thrust. It will operate at high pressure -- about 3,000 psi chamber pressure at 100 per cent thrust -- with expansion through a high area ratio nozzle.

It is the first known rocket engine to use an electronic digital control system -- known as "controller." The controller will accept vehicle commands for engine start, shutdown and thrust level. It will then provide the proper signals to the propellant valves to make the engine operate at the commanded condition.

Primary control is by closed-loop operation of two preburner oxidizer valves. Thrust control is accomplished by adjustment of the oxidizer preburner valve and mixture ratio control by the fuel preburner oxidizer valve.

The controller will monitor engine operation constantly and take corrective action automatically in the event of a failure. It also transmits engine operational data to the vehicle for storage and post-flight analysis.

Also, the controller and sensors will have a built-in redundancy for a fail-operational, fail-safe design, allowing the engine to continue to operate normally after failure of a single component and shut down safely if a second failure occurs.

In the 1960s the NSTL was known as the NASA-Mississippi Test Facility, a $300 million satellite organization of the Marshall Center.

NSTL was designated a permanent NASA field installation and its name changed by Dr. James C. Fletcher, NASA administrator, on June 14, 1974.

The NSTL, 45 miles by water from the NASA-Michoud Assembly Facility at New Orleans, occupies 13,424 acres of government-owned land. It is surrounded by a "buffer zone" of 128,526 acres.

The test stands to be used in the SSME and MPT test series will be operated by personnel of Rocketdyne Division of Rockwell International Corp.

The Space Shuttle consists of the reusable Orbiter with three SSMEs, which will carry payloads and people, the External Tank, which will carry liquid propellants for the SSMEs, and two reusable Solid Rocket Boosters (SRBs).

The Shuttle will be launched vertically with the three SSMEs and two SRBs firing at the same time. The SRBs will be jettisoned at burnout -- at an altitude of about 43.6 kilometers (140,000 feet) -- for descent by parachute into the ocean for recovery, refurbishment and reuse.

The Orbiter and ET continue together almost to Earth orbit where the SSMEs will shut down. The ET will then be jettisoned and allowed to fall into a predetermined area of the ocean. Most of the ET is

expected to be destroyed by the reentry heat.

The Orbiter, using two smaller Orbital Maneuvering System (OMS) engines, will continue into orbit. The crew will complete the mission -- normally about seven days -- and then guide the Orbiter through reentry for a horizontal landing. It can then be made ready for reuse in about two weeks.

The Orbiter will be a delta-winged craft 36 meters (122 feet) long with a wing span of 24 meters (78 feet). Its cargo bay will be 4.5 meters (15 feet) in diameter and 18 meters (60 feet) long. It will be able to carry 29,500 kilograms (65,000 pounds).

The crew cabin will normally seat four crewmen. Seats for up to three more persons -- male or female -- can be added to carry scientists and payload specialists. All will travel without space suits in the pressurized Orbiter.

The External Tank will be about 46.9 meters (153.7 feet) long and 8.4 meters (27.6 feet) in diameter. It will hold about 703,079 kilograms (1,550,000 pounds) of liquid oxygen and liquid hydrogen propellants.

Each SRB will be 3.7 meters (12.2 feet) in diameter and 45.5 meters (149.1 feet) long. Each will carry about 498,960 kilograms (1,100,000 pounds) of solid propellants.

The Marshall Center is responsible for development of the SSME, the ET and the SRB. The NASA-Johnson Space Center is responsible for development of the Orbiter and is lead NASA center in the Shuttle development program.

The prime launch sites for the Space Shuttle are the NASA-Kennedy Space Center, Fla., and Vandenburg Air Force Base, Calif.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 75-80

MARSHALL AWARDS CONTRACTS TO TWO LOCAL FIRMS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has awarded two contracts totaling $413,338 to Huntsville firms for data processing equipment maintenance and photographic services.

A contract for $205,172 was issued to American Technology Corp. for on-site preventive maintenance and repair services on government-owned automatic data processing equipment at the Marshall Center.

The contract calls for the firm to provide scheduled preventive maintenance, component and system checkouts and diagnostic routines, and isolation and repair of equipment malfunctions to keep the equipment operating properly at least 90 per cent of the time.

Term of the contract is one year, with the government having an option to extend.

-more-

April 22, 1975

Industrial Photo Services Division of Public Systems, Inc., was issued a $208,166 requirements type contract for one year of work with government option to renew.

The contract calls for the firm to pick up at MSFC's Photographic Division negatives, transparencies, and other copy materials, produce black and white prints, color prints and slides, viewgraphs and copy line negatives, and deliver the finished products to MSFC.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:
Upon Receipt
Release No. 75-84

CONTRACTS AWARDED BY MSFC IN MARCH ANNOUNCED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center during March awarded the following contracts of $25,000 or more:

ALABAMA

Birmingham -- Hinkle Supply Co., two contracts for a total of $76,427 for 22 items of aluminum alloy.

Huntsville -- AVCO Corp., $1,314,031 for system concept selection modification changes to the Structures and Propulsion Laboratory; Bell & Howell Instruments Div., $40,000 to modify and rework a Government-owned Bell & Howell MARS-2000 tape recorder; Brown Engineering Co., two contracts for a total of $259,000 for engineering support services; Bush and Millimaki Services, Inc., $196,867 for on-site preventive maintenance and repair services on Government-owned photographic, reproduction and miscellaneous office equipment.

-more-

May 1, 1975

Huntsville (cont'd)

Computer Services Corp., $200,000 for computational support services through April 30; IBM Corp. (three contracts), $42,000 for a software operating system through April 30, $100,000 for a study of mission analysis of payload integration, and $448,105 for a Space Tug study; Lockheed Missiles & Space Co., $93,514 for testing of a laser doppler system at Kennedy International Airport; and Management Services, Inc. (two contracts), $127,000 for operation and maintenance of Government-owned aircraft and $125,587 for general support services through April 30.

M&S Computing, Inc. (two contracts), $163,030 for Spacelab software development and integration and $49,835 for implementation of large scale integration circuit design software; and McAlister & McQuinn Construction Co., $228,670 for the antenna range test facility, building 4184.

Northrop Services, Inc., $379,000 for mission support services through April 13; Planning Research Corp., $266,000 for engineering support services through April 30; SCI Electronics, Inc., $27,000 for the design, fabrication, testing and delivery of data bus terminals and remote data acquisition units for the Concept Verification Test (CVT) bus breadboard; Sperry Rand Corp., $989,000 for engineering support services through April 18; Sperry Univac Federal Systems, $30,305 for data processing equipment; U.S. Army Engineers, $35,000 for work, study, design and redesign of the Structural Test Facility for the Testing of the Solid Rocket Boosters (SRBs) of the Shuttle.

Normal -- Alabama A&M University, $36,671 to develop remote sensing applications for natural resources study and management.

CALIFORNIA

Berkeley -- University of California, $30,000 for an Atmospheric, Magnetospheric, Plasmas in Space (AMPS) experiments study.

Huntington Beach -- McDonnell Douglas, $89,753 to incorporate the manned orbital concepts study to extend Shuttle/Spacelab manned mission capabilities.

La Jolla -- University of California, $248,645 to fund High Energy Astronomy Observatory (HEAO) experiment No. AGR4-Gamma Ray Telescope through July 10.

Los Angeles -- The Aerospace Corp., $40,000 for an Atmospheric, Magnetospheric, Plasmas in Space (AMPS) study; SAI Comsystems Corp., $67,959 for a study of the Marshall Center UNIVAC 1108 computer system verification/validation techniques; The Singer Co., $26,612 for three antenna systems and two receiver systems.

Sunnyvale -- Lockheed Missiles & Space Co., $54,950 for the development of substructure capability for the Structural Performance Analysis and Redesign (SPAR) computer system.

COLORADO

Boulder -- Ball Brothers Research Corp., $49,628 for a Gravity Probe study, a Shuttle launch experiment and the Explorer Program.

Denver -- Martin Marietta Corp. (four contracts), $94,000 for Skylab Systems engineering and integration through May 9, $30,977 for a research study on track-train dynamics, $34,490 for a mission analysis and payload integration study, and $85,500 for a Space Tug study.

CONNECTICUT

Norwalk -- Perkin Elmer Corp., $75,000 for a Large Space Telescope (LST) study.

FLORIDA

Coral Gables -- Connell Associates, Inc., $28,167 for modification to building 4550 for Space Shuttle vehicle for vibration testing.

Miami -- Future Metals, Inc., $27,986 for seven items of stainless steel.

West Palm Beach -- United Aircraft Corp., Pratt & Whitney Aircraft Div., $48,592 to test properties of several nickel alloys in hydrogen and at elevated temperatures.

GEORGIA

Atlanta -- CVC Products, Inc., $56,500 for 55 gallons of polyphenyl convalex-10; and Georgia Tech Research Institute, $59,799 for a study to define conceptual design of an on-board optical processor with components.

Forest Park -- Tubesales, $26,184 for five items of stainless steel pipe.

Warner Robins Air Force Base -- U. S. Air Force Logistics Center, $65,000 for a fuel servicing tank truck.

ILLINOIS

Chicago -- ITT Research Institute, $59,984 for a Skylab and a Space Shuttle experiment; and Kropp Forge Co., $29,241 for four items of alloy steel.

LOUISIANA

New Orleans -- Martin Marietta Corp., $39,000 to establish new line items for External Tank facilities.

Slidell -- Sperry Univac Federal Systems, $248,467 for data processing equipment.

MARYLAND

Elkton -- Thiokol Corp., $122,220 for 14 Tomahawk rocket motors and 14 Tomahawk igniters.

Gaithersburg -- Optelecom, Inc., $60,250 for fabrication and delivery of four internal mode selected gallium arsenide solid state laser diodes for the Space Tug.

MASSACHUSETTS

Cambridge -- American Science & Engineering, $30,000 for the Apollo Telescope Mount (ATM) experiment of Skylab through June 30; The Charles Stark Draper Laboratory, Inc., $120,859 for the design, development, fabrication, test and delivery of a lubricated full ball complement ball bearing system for the Skylab control moment gyroscope (CMG).

Cambridge (cont'd)

Harvard College, $98,945 for a Skylab Apollo Telescope Mount (ATM) experiment through June 30; and the Smithsonian Institution (two contracts), $30,000 in funds through July 31 for High Energy Astronomy Observatory (HEAO) experiment No. A-3 and $145,000 for the Gravitational Redshift Space Probe Experiment and for preliminary design support of HEAO.

Lexington -- Itek Corp., $75,000 for a Large Space Telescope (LST) study.

MICHIGAN

Ann Arbor -- University of Michigan, $49,781 for an Atmospheric, Magnetospheric, Plasmas in Space (AMPS) experiments definition study.

MISSOURI

St. Louis -- McDonnell Douglas Corp. (three contracts), $98,916 for a Shuttle study, $138,500 for a Shuttle study, and $62,089 for a study of opto-coupled semiconductor devices and light emitting diodes.

NEW JERSEY

Camden -- RCA Corp., $39,977 for an updating of various computer types and technologies.

NEW YORK

Albany -- The Dudley Observatory, $29,920 for the development of a microbalance for Space Shuttle payloads.

Leicester -- Profit Recovery Systems, $33,885 for photographic equipment.

PENNSYLVANIA

Allentown -- Air Products and Chemicals, Inc., $203,779 for liquid hydrogen for February.

Coatesville -- Lukens Steel Co., $84,900 for three items of alloy plates.

Philadelphia -- General Electric Co., $49,885 for a study to develop a containerless process for the preparation of tungsten.

Pittsburgh -- Westinghouse Electric Corp., two contracts totaling $86,300, for the Apollo-Soyuz Test Project (ASTP) experiment No. MA-010.

TENNESSEE

Arnold Air Force Station -- U.S. Air Force, $80,398 for a Space Tug engine performance verification program.

TEXAS

College Station -- Texas A&M Research Foundation, $45,000 for the development of a program for nonlinear structural analysis; Texas A&M University, $26,045 to develop techniques to control dislocation creation during the fabrication of large scale integration arrays for the Shuttle.

Dallas -- Texas Instruments, $65,266 for the development of an airborne electronically steerable phased array.

Houston -- Kelsey-Seybold Clinic, $64,000 for medical support services at MSFC through April 18.

UTAH

Brigham City -- Thiokol Corp., $3,508,000 to extend the letter contract for the Space Shuttle Solid Rocket Motor (SRM).

WASHINGTON

Seattle -- Boeing Aerospace Co., $61,353 for a Shuttle study.

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Total $12,253,741

12,673,741

12,253,741

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

FOR RELEASE:

Mike Sarr, 205/453-0035
Residence, 205/883-8998

Upon receipt.
Release No. 75-85

DR. NORONHA COMPLETES RESEARCH AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Pascal Noronha, a research associate in the Materials and Processes Laboratory of the NASA-Marshall Space Flight Center, has completed his research on stress fracture mechanics and crack-growth in metals being considered for the Solid Rocket Boosters (SRB) of the Space Shuttle.

Dr. Noronha came to the Marshall Center in 1973 under an associateship awarded by the National Research Council and NASA.

In his research, Dr. Noronha attempted to create, detect and monitor the progress of cracks in test samples of metals in a corrosive environment.

The samples would be under stress to drive the cracks, and the progress of crack-growth would be monitored by a sensitive crack opening displacement gauge.

Since the SRBs will be parachuted into the ocean after lifting the Shuttle toward orbit, cracks in metal would be subjected to an oceanic environment.

-More-

April 30, 1975

Progress of cracks was monitored by the gauge developed at the Marshall Center and improved by Dr. Noronha. Measurements of crack displacement are now several times more sensitive than before and can be recorded and interpreted in a few days instead of the several weeks previously required.

Through research by Dr. Noronha and others at MSFC, the proper materials will be selected for the SRBs, which are designed to be used many times before replacement. Therefore, it is important to know how materials of a space vehicle will perform after periods of ocean exposure between flights.

Born in Bombay, India, Dr. Noronha received his bachelor of science degree in metallurgy from the University of Poona, India. At Stanford University he received his master of science degree in materials science in 1970. He received his doctorate in materials science from Vanderbilt University in 1973 before coming to the Marshall Center. E. C. McKannan, chief of the laboratory's Metallic Materials Division, was his MSFC advisor.

Dr. Noronha is one of a number of researchers presently working at the Marshall Center under associateships granted by the National Research Council in its program to provide an opportunity for continuing research in a field that is mutually beneficial to the individual, the National Research Council and NASA.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:

Upon Receipt
Release No. 75-86

DR. HOLDEMAN COMPLETES RESEARCH AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Louis Holdeman, a research associate in the Low Temperature and Gravitation Science Branch, Low Temperature Science Division, Space Sciences Laboratory, has completed a two-year research tenure at the NASA-Marshall Space Flight Center.

He came to the Marshall Center in May, 1973, under an associateship awarded by the National Research Council and NASA.

Dr. Holdeman's research involved development of a solid state gyroscope readout system that is mechanically stable, flightworthy and able to perform in a low-temperature environment. This device will be part of an experiment which will test several theories of gravity, including Einstein's theory of relativity.

Dr. Holdeman and his colleagues at MSFC are confident that the device will perform well in space.

Scientists hope to learn more about the universe and the mysteries of gravity through this research.

-more-

May 5, 1975

Born in Baton Rouge, La., Dr. Holdeman attended Louisiana State University, receiving a bachelor of science degree in physics in 1962. He received his master of science degree in physics from Stanford University in 1965 and his doctorate in physics from Stanford in 1972.

Upon leaving the Marshall Center, Dr. Holdeman will begin work with the National Bureau of Standards.

Dr. Holdeman is one of a number of researchers presently working at the Marshall Center under associateships granted by the National Research Council in its program to provide an opportunity for continuing research in a field that is mutually beneficial to the individual, the National Research Council and NASA.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 75-87

MSI SELECTED FOR AIRCRAFT SUPPORT CONTRACT NEGOTIATIONS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has selected Management Services, Inc., for negotiations leading to a proposed contract for providing aircraft support services at the Huntsville space installation.

The firm will support the Center's Transportation Division in the Logistics Office.

Services will include operation and maintenance of government-owned aircraft based at the Marshall Center and Langley Research Center.

The contract will be from June 1, 1975, through May 31, 1976, with two one-year options. An estimated 35 people will be required for this work.

Management Services, Inc., is the present aircraft support services contractor. Serv-Air, Inc., was also a bidder.

# # #

May 6, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:
Upon Receipt
Release No. 75-88

LAGEOS SATELLITE SHIPPED TO MCDONNELL DOUGLAS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The Laser Geodynamic Satellite (LAGEOS) which was developed and manufactured at Marshall Space Flight Center will be shipped to the McDonnell Douglas Astronautics Co. (MDAC) at Huntington Beach, Calif.

The satellite which is scheduled for launch in March, 1976, by a Delta launch vehicle will be undergoing test while at MDAC with the launch vehicle separation system.

After final orbit is obtained via the launch vehicles' upper stage, the separation system ejects the satellite from the fourth stage rocket and allows the satellite to continue in a 3,200 mile circular orbit.

LAGEOS, an inert satellite about 60 cm (24 in.) in diameter and weighing approximately 385 kg (820 pounds), contains 426 precision optical retroreflectors.

Laser beams will be bounced off the satellite to provide extremely accurate measurements between ground stations and the satellite. These measurements will assist in earthquake predictions, Earth rotation and polar motion determination and determination of changes in the Earth's crust.

The project is a part of the Earth and Ocean Physics Applications Program (EOPAP) being conducted by the NASA Office of Applications.

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May 13, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:
Upon Receipt
Release No. 75-89

ASTP EXPERIMENT MAY AID MEDICAL RESEARCH

MARSHALL SPACE FLIGHT CENTER, Ala. -- A scientific experiment to be conducted by American astronauts during the Apollo Soyuz Test Project (ASTP), the joint U. S. - Soviet space mission scheduled for July 15, may hold the key to helping researchers develop drugs to fight strokes, heart attacks, clots and blood diseases.

The study, entitled "Electrophoresis Technology Experiment System (MA-011)," is one of 10 ASTP experiments which are the responsibility of the NASA-Marshall Space Flight Center (MSFC). The Saturn IB launch vehicle for the mission will also be provided by MSFC.

Dr. Robert E. Allen, of the Materials and Processes Laboratory, Science and Engineering Directorate, MSFC, is principal investigator for the electrophoresis experiment. Electrophoresis, the separation of biological materials such as cells by means of an electric field, is an important tool in biological and medical research.

-more-

May 14, 1975

The 30-pound experiment is to include four test columns of red blood cells, two of lymphocytes and two columns of kidney cells in five-inch tubes which will be subjected to an electrical field.

In the weightlessness of space, the electrical field is expected to separate certain cells since each reacts to a different degree to the electrical field.

Among the enzymes, scientists hope to isolate the enzyme urokinase, produced by kidney cortex cells. Urokinase is the only naturally-occurring enzyme in the human body that dissolves blood clots which have already formed.

If the enzyme can be isolated and the production of it by kidney cells understood, scientists hope to one day be able to isolate more urokinase on Earth. Urokinase is effective in combatting phlebitis, heart attacks and strokes.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
Upon Receipt
Release No. 75-90

STUDIES CONTINUE TOWARD DEVELOPMENT OF NEW ENERGY SOURCES

MARSHALL SPACE FLIGHT CENTER, Ala. -- As a part of on-going investigations of large space-based power systems as alternative energy sources, the NASA-Marshall Space Flight Center (MSFC) has issued a request for proposals for a study of space-based power conversion and power relay systems.

Previous studies have defined concepts for generating power in geosynchronous orbit using large solar cell panels and for transmitting it to Earth via microwaves, as well as for generating power in remote locations and transmitting it to the desired location via an orbital microwave relay system.

The proposed study would examine alternate means for generating electrical power in space. The emphasis will be on the identification and delineation of problem areas and new technology required for development of these power systems. It will also include possible new systems that may be proposed by the contractor.

Proposals for the study, which will cover a ten-month period, are required by MSFC by May 27.

NASA—MSFC

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May 14, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-91

CONTRACT ISSUED TO THIOKOL

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration has issued a definitive contract to the Wasatch Division of Thiokol Corporation for Solid Rocket Motors (SRMs) for the Space Shuttle.

The contract, with a period of performance from June 26, 1974, through June 30, 1980, brings to $140,577,924 the total value of the effort. A letter contract was issued to Thiokol on June 26 to give authority to proceed.

The definitive contract calls for the design, development, test and evaluation of the SRM, including support equipment, tooling and support parts, SRM system s integration support and special studies, and data and documentation for the SRM.

-more-

May 15, 1975

Two Solid Rocket Boosters will be used on each flight of the Shuttle, with the first flight scheduled in 1979. The SRBs are to be parachuted into the ocean, recovered and reused.

The NASA-Marshall Space Flight Center is responsible for development of the SRB, the External Tank (ET) which will carry liquid propellants, and for the main engines of the Shuttle Orbiter.

Thiokol was selected for award of this contract by the NASA Administrator under formal Source Evaluation Board procedures.

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FOR RELEASE:

Upon Receipt
Release No. 75-93

QUOTATIONS SOUGHT FOR X-RAY SOURCE SYSTEM

MARSHALL SPACE FLIGHT CENTER, Ala. -- A request for quotations has been issued by the NASA-Marshall Space Flight Center (MSFC) for an X-ray source system for the X-ray telescope facility presently under construction at MSFC.

The X-ray source system, to be installed on a 40.6 cm (16 in.) by 39.3 cm (15.5 in.) steel flange, is to be installed completely and checked out by Feb. 20, 1976.

Quotations submitted by interested firms are due at the Marshall Center by May 28.

The contractor will submit a detailed schedule indicating the dates of completion for each phase of the design, fabrication, assembly, preliminary in-plant checkout, installation in the X-ray facility and the verification checkout of the X-ray source system.

The contractor has the option of manufacturing a 36.8 (14.5 in.) by 38.1 cm (15 in.) cover for the X-ray source.

The X-ray telescope facility is being constructed for use in the High Energy Astronomy Observatory (HEAO) project.

\# May 16, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:

Upon Receipt
Release No. 75-94

FLAT CONDUCTOR CABLE BEING INSTALLED IN SOLAR HOUSE

MARSHALL SPACE FLIGHT CENTER, Ala. -- Flat conductor cable, originally developed by NASA for rocket and spacecraft wiring, is being installed in the experimental Solar House at the NASA-Marshall Space Flight Center.

The Solar House is a simulated dwelling designed to use only the Sun's energy for all of its heating and cooling needs.

This installation, expected to be completed in mid-June, is the third experimental project for a flat conductor cable wiring system.

Flat conductor cable has already been installed successfully in an MSFC conference room and in six apartments in Yonkers, N. Y. The Yonkers project is a joint effort between NASA and the New York State Urban Development Corp.

Surface-mounted flat conductor cable wiring for commercial and residential applications has been under development by NASA for several years. Flat conductor cable is installed with a surface-mounted baseboard system and provides an electrical wiring system that is lower in cost, easier to install, adaptable to all types of wall construction and is as safe as or safer than the conventional roundwire electrical systems.

The flat conductor cable can be routed under wall paneling, tile and carpet, and the low voltage flat cable for lights and receptacles can be routed under wall paper or simply painted.

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May 16, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-95

SENTINEL PROTECTIVE SERVICES AWARDED CONTRACT

MARSHALL SPACE FLIGHT CENTER, Ala. -- The minority firm of Sentinel Protective Services of Dothan, Ala., has been awarded a contract by the Small Business Administration for security services at the NASA-Marshall Space Flight Center (MSFC).

The security services contract is one of several set aside by MSFC for awarding to minority businesses under Section 8(a) of the Small Business Act.

The cost plus award fee contract will be effective June 1 and is for a period of one year with options for two additional one year contracts. Cost of the first year contract, exclusive of award fee, is $652,000.

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May 20, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:

Upon Receipt
Release No. 75-97

DATA BUOYS SHOW WATER RESOURCES, POLLUTION EFFECTS

MARSHALL SPACE FLIGHT CENTER, Ala. -- A joint effort between NASA and the State of Mississippi is helping to develop a good picture of the state's major water resources and the effects of pollution on the system.

As part of the Earth Resources Survey program, three data buoys have been placed in the Pearl River. These buoys utilize the Data Collection System of data relay on the Land Satellite-II (LANDSAT-II).

The project is a cooperative venture by the Mississippi Air and Water Pollution Control Commission, the Pearl River Development Association, the NASA-Marshall Space Flight Center (MSFC) and the NASA-National Space Technology Laboratories (NSTL).

The buoys transmit water quality data to LANDSAT-II, which was launched earlier this year. The satellite relays the data to a tracking station at NSTL where it is fed into a computer and then relayed to a state computer at Jackson, Miss.

-more-

May 22, 1975

This method of operation provides processed data to the Mississippi Air and Water Pollution Control Commission within 15 minutes of a satellite pass over the buoys.

State investigators in Jackson can determine where a pollution source is by comparing the measurements from buoys placed at different points along the river.

The satellite passes over the buoys twice a day, or once every 12 hours. For data collection, the satellite must be in view of both the receiving station at NSTL and the buoys at the same time.

Therefore, the buoys have a programmable timer for operation in 12-hour cycles. The buoys automatically switch on for three hours when the satellite is in view and switch off for nine hours when the satellite is out of view.

This cycle allows ample time for the warmup and stabilization of the sensor system prior to the earliest time of the arrival of the satellite overhead and keeps the buoys on long enough to cover the latest overhead departure of the satellite.

Approximately 27 days of operation are allowed by this cycle between battery charges and seven days between sensor cleanings. The buoys can be serviced from a small boat by two men.

-more-

The buoys measure water temperature, dissolved oxygen, Ph (acidity and alkalinity) and conductivity, a measure of how well electricity flows. This is the information transmitted to the computer terminal via LANDSAT-II.

In another project, being conducted by the Marine Environmental Sciences Consortium (MESC), data buoys have been placed in Mobile Bay and have been present for two years.

They transmit data hourly to a ground station located on Dauphin Island, operated by the MESC, an Alabama state school supported by 18 universities.

Measurements of water temperature, conductivity and current velocity and direction are recorded on magnetic tape for shipment to a processing center and decoded and displayed on strip charts for analysis.

These low-cost, low-maintenance data buoys have an optimistic future, according to Rex Morton of the Data Systems Laboratory at MSFC. Present plans are to simplify the design and fabrication of the buoys and to conduct more test projects, he said.

The usefulness of the system and possible improvements by the state agencies is of great concern to NASA. MSFC's Data Systems Laboratory, directed by J. T. Powell, is applying the information to optimize the design of future data and information systems for both manned and unmanned satellites.

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FOR RELEASE:

Upon Receipt
Release No. 75-98

MSFC PROCUREMENTS FROM SMALL BUSINESS DOUBLES

MARSHALL SPACE FLIGHT CENTER, Ala. -- In connection with Small Business Week, May 25-31, officials at the NASA-Marshall Space Flight Center (MSFC) have announced that small business contracts during the first three quarters of fiscal year 1975 totaled $24,234,000.

The percentage of MSFC's total procurement dollars going to small businesses has increased from 4.9 per cent in fiscal year 1973 to 9.8 per cent in the first three quarters of FY 1975, representing a 100 per cent increase in small business contracts.

In proclaiming the week of May 25 as Small Business Week, President Gerald Ford said, "Small business in America is still the free enterprise system's gateway to opportunity--the means by which millions of Americans continue to build a better life for themselves and their families."

-more-

May 22, 1975

Out of the estimated 9.7 million businesses in America today, more than nine million are small. They account for nearly half of the gross business product and more than half of the business labor force.

NASA--and the Marshall Center--has always taken an active interest in the small business community. In endorsing the President's proclamation, NASA Administrator James C. Fletcher said, "This is an appropriate time for us to ensure that small business will continue to be a vital partner in the nation's aeronautics and space endeavors."

Gerald D. Ridgeway, small business industry assistance officer in MSFC's Procurement Office, said that the increase in small business contracts awarded by the Marshall Center is due, in part, to a vigorous small business program. MSFC has 13 small business and minority business coordinators who are located in most of the major laboratories and offices.

In addition, an alphabetical source list of approximately 4,300 small businesses has been compiled in the past year. This source list includes the capabilities of each business and is screened in connection with each contract to be awarded.

MSFC also has a minority business specialist, Conrad Walker, assigned to the Equal Opportunity Office whose responsibility it is to maintain liaison with minority businesses and assist them in obtaining contracts.

Ridgeway feels that local small businesses play an important role in cost savings to MSFC through contract awards. He said, "I hope more small business concerns with innovative techniques will contact me about the possibility of being considered for contracts and arrange a demonstration of their capabilities."

Ridgeway is located in building 4201 in the MSFC headquarters complex at the Redstone Arsenal near Huntsville, Ala. His telephone number is 453-2675.

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FOR RELEASE:

Upon Receipt
Release No. 75-99

SUMMER FACULTY FELLOWSHIP PROGRAM SET AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- A total of 44 educators from 37 colleges and universities will participate in the NASA/American Society for Engineering Education (ASEE) Summer Faculty Fellowship Programs this summer at the NASA-Marshall Space Flight Center (MSFC).

The two programs, Engineering Systems Design and Aeronautics and Space Research, will be conducted by Auburn University and the University of Alabama, respectively. Five other NASA centers are hosting similar ASEE programs this summer.

This is the eighth year the Marshall Center has hosted the Engineering Systems Design Program and the 11th year MSFC has hosted the Aeronautics and Space Research Program. Dr. William Lucas, MSFC director, will welcome the Summer Faculty Fellows upon their arrival June 2.

-more-

May 23, 1975

Dr. Reginald Vachon of Auburn and Dr. Randy Humphries of the MSFC Structures and Propulsion Laboratory are the co-directors of the Engineering Systems Design Program.

Faculty members in this program, which runs from June 2 through August 15, will show how energy conservation can be achieved through the application of NASA technology.

Co-directors of the Aeronautics and Space Research Program are Dr. Bobby Barfield of the University of Alabama and Charles Jones of the MSFC Electronics and Control Laboratory.

Educators in this program, which lasts from June 2 through August 8, will conduct research in the design and development of space transportation systems, scientific payloads and a wide range of projects in the engineering and natural sciences.

Educators participating in the Engineering Systems Design Program are: Drs. Harvey S. Bierenbaum, Roger A. Crane and Jerry E. Sergent, University of South Florida, Tampa; Dr. John T. Dunlap, Columbus (Ga.) College; Dr. Warren M. Hankins, University of Evansville, Evansville, Ind.; Dr. Bruce E. Johnson, Ohio Northern University, Ada; Profs. William C. Johnson and Albert Pedulla, Texas A&M University, College Station; Dr. Naim A. Kheir, University of Alabama at Huntsville; Dr. Robert T. Lalk, The Cooper Union, New York, N. Y.; Dr. John C. Martin, Clemson University,

Clemson, S. C.; Dr. William P. Moran, Tulsa University, Okla.; Dr. Jeffrey Morehouse, Auburn University, Auburn, Ala.; Dr. Charles M. Overby, Ohio University, Athens; Dr. Heriberto Plaza, University of Puerto Rico, Mayaguez; Drs. Paul Rappoport and John A. Sorrentino, Temple University, Philadelphia, Pa.; Dr. James R. Smith, Tennessee Technological University, Cookeville; Dr. George H. Stickney, University of Missouri, Columbia; Dr. John W. Williamson, Vanderbilt University, Nashville, Tenn., and Prof. Edmund R. Young, Iowa State University, Ames.

Those participating in the Aeronautics and Space Research Program are: Dr. Joseph A. Biesbrock, North Georgia College, Dahlonega; Dr. Billy D. Carroll, Auburn; Dr. Ronald M. Cosby, Ball State University, Muncie, Ind.; Dr. George C. Debney Jr., Virginia Polytechnic Institute Blacksburg; Dr. David E. Douglas, Arkansas Polytechnic Institute, Russellville; Drs. Theodore D. Fay and Harold Mott, University of Alabama, Tuscaloosa; Dr. William J. Foreman Jr., University of Montevallo, Montevallo, Ala.; Prof. Donald O. Frazier, Atlanta University, Ga.; Drs. William B. Hall, Jerrel Reed Mitchell and W. Steve Shepard, Mississippi State University, State College; Prof. Leroy A. Holmes, Modesto Junior College, Calif.; Dr. Walter G. Hopkins, Alabama A&M College, Normal; Dr. Leendert Kersten, University of Nebraska, Lincoln; Dr. Ashley M. Martin, Athens College, Ala.; Dr. William B. Newbolt, Washington and

Lee University, Lexington, Va.; Dr. Arthur C. Nunes, University of Houston, Tex.; Dr. Ralph E. Oberly, Marshall University, Huntington, W. Va.; Dr. Min-tai Pao, Savannah State College, Ga.; Dr. Bert L. Smith, Wichita State University, Kansas; and Dr. Donald F. Utter Jr., Bucknell University, Lewisburg, Pa.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:
Immediately
Release No. 75-100

GIANT BALLOON CARRIES GAMMA-RAY DETECTORS FOR MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- A giant balloon carrying a gamma-ray detector instrument package for the NASA-Marshall Space Flight Center (MSFC) touched down near Fort Stockton in west Texas at 9:30 a.m. today (June 23) after a flight of nearly 23 hours.

May!

The 10-million-cubic-foot balloon was launched at 6:30 a.m. May 22 from Palestine, Tex., about 800 kilometers (500 miles) from the landing site. The balloon reached an altitude of 40 kilometers (125,000 feet).

Purpose of the flight was to detect the source and determine the nature of sudden bursts of gamma rays -- high-energy bundles of electro-magnetic radiation. These mysterious increases in gamma rays, coming from various directions in space, last from one to 30 seconds.

Their sources are not known; it is only known that they do not come from the Sun or the planets. Scientists have concluded that the celestial bodies that emit such rays must be more energetic than the Sun.

The balloon took its detection instruments--which were developed and constructed at MSFC--above most of the Earth's atmosphere.

-more-

May 23, 1975

Gamma rays do not penetrate below 30 kilometers (100,000 feet) from the Earth's surface.

The balloon was launched by the National Center for Atmospheric Research (NCAR) at Palestine. NCAR also tracked the balloon for the flight. The flight was a project of the Cosmic Radiation Branch in MSFC's Space Sciences Laboratory (SSL). The branch is headed by T. A. Parnell.

Principal investigator for the project is Dr. Jerry Fishman, of SSL. Co-investigators are Parnell and Jim Derrickson of SSL, and Dr. John Gregory of the University of Alabama in Huntsville.

The balloon's instrument payload was brought to Earth by parachutes, which separated from the balloon upon electronic command from the ground. The payload was recovered undamaged and will be returned to MSFC for analysis.

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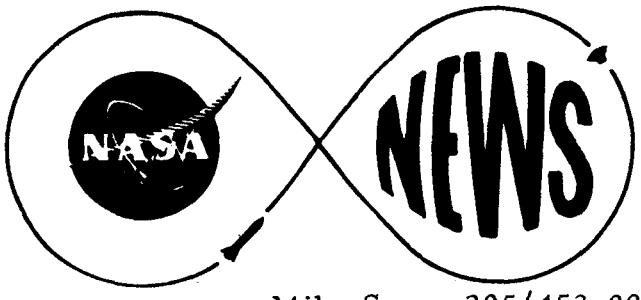
1 AERON
2 DISC



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FOR RELEASE:

Upon Receipt
Release No. 75-101

MSFC CONTRACTS AWARDED IN APRIL

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) during April awarded the following contracts of $25,000 or more:

ALABAMA

Auburn--Auburn University, $31,500 for a study of the development of the Alabama Resources Management System.

Huntsville--American Technology Corp., $205,172 for on-site preventive maintenance and repair services on Government-owned automatic data processing equipment; Bell & Howell, $29,568 for a tape recorder transport (MARS 2000) with accessories for the Solid Rocket Booster (SRB) program; Boeing Co., $59,990 for a Space Shuttle Propulsion Simulation Model; Brown Engineering, $1,300,000 for engineering support services through June 13; Computer Services Corp., $300,000 for computational support services through May 15; and Engineered Maintenance Services, $34,499 for rehabilitation to "B" wing of building 4663.

-more-

March 28, 1975

General Electric Co., $808,000 for logistic support of the launch vehicle ground support equipment for the Apollo Soyuz Test Project (ASTP); Hayes International Corp., $210,641 for general support services through May 17 for the MSFC Management Services Office; Hewlett-Packard Co., $35,388 for ten items of miscellaneous electronic components for the Rocket Exhaust Effluent Diffusion Analysis System (REEDA), which will be operated at various launch and test sites.

IBM Corp., $47,588 to update general provisions for the Spacelab Scientific Data user interaction; IBM Federal Systems Div., $74,000 in funds through March 31 for the Apollo Telescope Mount (ATM) digital computer; Industrial Photo Services, Division of Public Systems, Inc., $208,166 for photographic work; Lockheed Missiles & Space Co., two contracts for a total of $75,000 for two Space Shuttle studies; and New Technology, Inc., $200,000 for a user technology study.

Northrop Services, Inc., $511,900 for mission support services through June 15; Planning Research Corp., $330,200 for engineering support services through June 15; SCI Systems, Inc. (two contracts), $178,000 to fabricate, test and deliver nine data interface units and two computer interface units, and $94,250 for a study leading to standard interfaces for digital data; Sperry Rand Corp., $1,300,000 for engineering support services through June 15; U.S. Army Engineers, ($106,984), a decrease in funds for the installation of special test equipment and management for modification to the acoustic model

engine test facility at MSFC; University of Alabama, $31,000 for an Earth Resources study; and Xerox Corp., $26,040 for equipment to support the Space Shuttle Main Engine (SSME) project.

Redstone Arsenal--U.S. Army Missile Command, $541,000 for general maintenance, maintenance and repair of electrical equipment, grounds maintenance, electricity, heating (steam) and water.

CALIFORNIA

Anaheim--Media III, $29,855 for seven items of an interface system with installation and checkout.

Canoga Park--Rockwell International, Rocketdyne Div., (six contracts), two contracts for a total of $6,119,888 in incremental funding for the Space Shuttle Main Engine (SSME), $264,957 for operational, flight and site support for Saturn engines in support of the Apollo Soyuz Test Project (ASTP), $49,748 for the transfer of government assets from Edwards Field Laboratory to Kirtland Air Force Base, N.M., $632,367 increase in funds for the Space Shuttle Main Engine (SSME), and $27,000 to amend facilities for the Space Shuttle Main Engine (SSME) at the Santa Susana Field Laboratory.

Downey--Rockwell International, Space Div., $39,793 for the development of a computer program for the Solid Rocket Booster (SRB) program; and Rockwell International (200,000), a decrease in funds for the Skylab S-II stage.

-more-

Fullertown--Beckman Instruments, $33,223 for a Skylab experiment.

Huntington Beach--McDonnell Douglas Corp., (four contracts), $95,000 for a Space Tug study, $1,675,000 in funding through July 18 for the S-IVB stage in support of the Apollo Soyuz Test Project (ASTP), ($350,000) a decrease in funds for a Skylab experiment and ($150,000), a decrease in funds for the Saturn S-IVB stage in support of the Apollo Soyuz Test Project (ASTP).

Oxnard--Gould Inc., Statham Instruments Div., $32,300 for five items of transducers for Solid Rocket Booster (SRB) measuring requirements.

San Diego--General Dynamics, Convair Aerospace Div., $352,074 for a study of lightweight designs and materials for liquid oxygen and hydrogen propellant tanks for space vehicles.

Santa Monica--System Development Corp., $105,751 for the fabrication and delivery of interactive control hardware for processing a Skylab experiment.

Sunnyvale--Lockheed Aircraft Corp., $100,000 for a Large Space Telescope (LST) study.

COLORADO

Boulder--U.S. Department of Commerce (two contracts), $32,000 for an Atmospheric, Magnetospheric, Plasmas in Space (AMPS) study and $65,000 for analysis of a Skylab experiment.

Denver--Martin Marietta Corp., (three contracts), $100,000 for a Large Space Telescope (LST) study, $55,000 for an integrated display system for teleoperator and experiments, and $40,000 for Skylab systems engineering and integration.

Fort Collins--Colorado State University, $25,000 for a Space Shuttle study.

CONNECTICUT

Norwalk--Perkin-Elmer Corp. (two contracts), ($50,000) a decrease in funds for a Spacelab experiment, and $110,580 for eight proto/flight X-ray mirror assemblies for the X-ray test facility at MSFC and the flight set of high resolution mirror assemblies for a High Energy Astronomy Observatory (HEAO) telescope experiment.

FLORIDA

Cape Canaveral--Chrysler Corp., $68,256 for the development of a solar powered residential air conditioner for the Solar Energy Program.

West Palm Beach--Pratt & Whitney Aircraft, United Aircraft Corp., $155,000 for a Space Tug study.

GEORGIA

Americus--Georgia Southwestern College, $27,962 for a study of geological resources/vegative relationships.

Atlanta--Morehouse College, $42,512 for a research program in atmospheric and astro chemistry; and U.S. Government Printing Office, $49,000 for commercial printing services.

ILLINOIS

Chicago--ITT Research Institute, $44,998 for the development of space stable thermal control coatings for use in large space vehicles.

LOUISIANA

New Orleans--Chrysler Corp., $755,000 in funds for the S-IB stage through June 30 in support of the Apollo Soyuz Test Project (ASTP); and Martin Marietta Corp., (two contracts), $2,970,000 in funds through June 30 for the Space Shuttle External Tank and $758,000, an increase in funds for facilities for the Shuttle External Tank.

MARYLAND

Gambrills--Ecosystems, Inc., $29,935 for an Earth Resources study.

Silver Spring--U. S. Department of Commerce, $26,000 for an Earth Resources study.

MASSACHUSETTS

Cambridge--Smithsonian Institution, ($188,964), a decrease in funds for a Skylab Apollo Telescope Mount (ATM) experiment.

NEW JERSEY

Camden--RCA Corp., $53,429 for a Space Ultrareliable Modular Computer Simplex (SUMC-S).

Teterboro--Bendix Corp., $46,000 for repair, modification and logistic support of the ST-124 platform in support of the Apollo Soyuz Test Project (ASTP).

NEW YORK

Albany--State University of New York, $125,000 for a Skylab experiment.

Buffalo--Calspan Corp., $59,025 for an External Tank study.

East Aurora--Moog Inc., $185,000 for ten electrohydraulic servo-actuators for the Space Shuttle Main Engine (SSME).

Great Neck, Long Island--Sperry Rand Corp., Sperry Gyroscope Div., $158,025 for a Space Tug study.

New York--R. H. Pines Corp., $57,422 for six items of carbon steel.

OHIO

Lima--Westinghouse Electric, $148,616 for the fabrication of three different types each of both single and double pole solid state relay switchers.

OREGON

Portland--University of Oregon, $35,213 for a study of an Automated Analytical Electrophoresis Facility (AAEF).

PENNSYLVANIA

Allentown--Air Products & Chemicals, Inc., $205,265 for liquid oxygen for March.

Philadelphia--General Electric Co., $194,083 for a containerless processing system for the Black Brant sounding rocket series.

Pittsburgh--Westinghouse Electric Astronuclear Laboratory, (two contracts) totaling $81,052 in funds for an Apollo Soyuz Test Project (ASTP) experiment.

TENNESSEE

Knoxville--University of Tennessee, $62,410 for an aerodynamics study.

TEXAS

Houston--Armco Steel Corp., $142,258 for 21 items of carbon steel in support of the Space Shuttle.

UTAH

Brigham City--Thiokol Corp., (two contracts), $140,577,924, a definitive contract for the Space Shuttle Solid Rocket Motor, and $64,931 for construction projects for the Solid Rocket Motor.

VIRGINIA

Alexandria--Essex Corp., (two contracts), $29,978 for a Space Tug study and $29,996 for human factor design requirements for the teleoperator.

WASHINGTON

Seattle--Boeing Co., $100,000 for a Large Space Telescope (LST) study.

WASHINGTON, D. C. --Motorola Communications and Electronics, Inc., $34,724 for continued maintenance of government-owned communication systems equipment at MSFC and National Space Technology Laboratories and Michoud Assembly Facility; and Naval Research Laboratory, $100,000 for a Skylab experiment.

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FOR RELEASE:

Upon Receipt
Release No. 75-102

MSFC PARTICIPATES IN SEVERE STORM STUDIES

MARSHALL SPACE FLIGHT CENTER, Ala. -- Techniques for predicting when and where tornadoes may strike could be improved by data-gathering experiments conducted recently by NASA involving the coordinated use of meteorological satellites, aircraft, radar and weather balloons.

The NASA-Marshall Space Flight Center (MSFC) is playing an important role in the projects, officially known as Atmospheric Variability Experiment IV and Atmospheric Variability Severe Storms Experiment I and II. The experiments were carried out during April and May--the high-probability period of severe weather--in an area comprising approximately two-thirds of the United States, from the Rocky Mountains to the Atlantic Coast.

The NASA-Goddard Space Flight Center, Greenbelt, Md., also participated, with support from the U.S. Air Force, Army and National Weather Service.

-more-

May 28, 1975

A total of 52 tornadoes were reported in the area under study during the three experiments, each of which covered 24 hours.

Primary purpose of the experiments was to compare information from all data-gathering sources with ground-truth observations to attempt to determine the relationship between severe storms and their environment.

Factors such as thunderstorm updraft and the relation of cloud motion and wind in areas of severe storm formation and dissipation were among those studied.

As many as 41 radiosonde stations (which receive data telemetered back to Earth by weather balloons), 18 radar stations, seven airplanes (carrying special sensors) and five meteorological satellites were active in the project.

The large number of tornadoes occurring during the experiment period provided an excellent data base for the study of circulation patterns and satellite soundings versus ground-based measurements in terms of severe atmospheric phenomenon identification and prediction.

The ground-truth portion of the experiments is managed for MSFC by Robert Turner and Kelly Hill of the Space Sciences Laboratory, Science and Engineering Directorate.

Principal investigators include scientists from Texas A&M University, University of Tennessee Space Institute, University of Oklahoma, Massachusetts Institute of Technology, University of Wisconsin, Drexel University and Goddard Institute for Space Studies.

Data from these experiments are being analyzed to provide information for the assessment of weather satellites and severe storms, and to provide information for studies directed toward advancement of weather prediction. Another experiment is scheduled for spring of 1976.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:

Upon Receipt
Release No. 75-104

MSFC AWARDS AIRCRAFT OPERATION CONTRACT

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has awarded a $810,162 contract to Management Services, Inc., Huntsville, Ala.

The one-year contract is for the operation and maintenance of four Government-owned aircraft at the NASA-Marshall Space Flight Center and for the operation and maintenance of one Government-owned aircraft at the NASA-Langley Research Center.

The contract, awarded on May 30, will run from June 1 through May 31, 1976, and contains provisions for two one-year renewals at the Government's option.

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June 4, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:

Upon Receipt
Release No. 75-105

ASTP EXPERIMENT MAY PRODUCE IMPROVED OPTICAL FIBERS

MARSHALL SPACE FLIGHT CENTER, Ala. -- During this summer's joint U. S. - Soviet manned space mission, the Apollo Soyuz Test Project (ASTP), American astronauts will attempt to "manufacture" a space-made material which could improve communications on Earth considerably through better electronic circuitry, telephone and television equipment.

Elements will be combined in a small electric furnace to produce optical fibers, embedded in a matrix, with qualities which cannot be duplicated in an Earth-bound laboratory. The furnace is being developed by the NASA-Marshall Space Flight Center (MSFC), which will also provide the Saturn IB launch vehicle for the mission.

Principal investigator for the scientific experiment, entitled "Halide Eutectics (MA-131)," is Dr. Alred S. Yue of the University of California, Los Angeles, under contract to MSFC. Monitoring the effort for MSFC is Dr. Mary H. Johnston of the Materials and Processes Laboratory, Science and Engineering Directorate.

-more-

June 4, 1975

Samples of a sodium-chloride and lithium-flouride composition with a low melting point will be melted in the furnace and then solidified. This material solidifies in the form of fibers of lithium-flouride embedded in sodium-chloride that can act as an image-transmitting medium for infrared light.

The experiment will attempt to produce samples with a fiber distribution showing a high degree of orientation, regularity and fiber continuity.

Electrical and optical characteristics of this material are expected to make possible exciting applications in the communications field in the future.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
Release No. 75-106

BENDIX SELECTED FOR SRB INTEGRATED ELECTRONICS ASSEMBLIES CONTRACT

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has selected Bendix Corporation's Guidance Systems Division for negotiations leading to a contract for Integrated Electronic Assemblies (IEA) for the Solid Rocket Booster (SRB) of the Space Shuttle.

The resulting contract will be for the design, development, test and evaluation and for fabrication and assembly of IEAs and associated test equipment for the first six Shuttle flights.

The initial contract will call for 33 units, which includes flight articles, spares and development and test versions. The contract will be a cost-plus-incentive-fee/award-fee type agreement.

Each SRB will have two IEAs, one forward and one aft. The aft IEA interfaces with the Shuttle Orbiter, the forward IEA and other avionics systems. Ignition commands are routed from the Orbiter through the aft IEA to the forward IEA.

-more-

June 4, 1975

During launch, the aft IEA routes commands from the Orbiter to control the thrust vector (steering) control system.

The forward IEA initiates the release of the nose cap and frustum, jettison of the solid rocket motor nozzle, detachment of the parachutes and turn-on of the recovery aids. The SRBs are designed for recovery, refurbishment and reuse.

Deliveries of IEAs are scheduled to begin in 1976 and continue through April 1, 1979.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:
Upon Receipt
Release No. 75-108

MARSHALL CENTER HIRING 256 SUMMER EMPLOYEES

MARSHALL SPACE FLIGHT CENTER, Ala.--A total of 256 summer employees, in all categories, are being hired by the NASA-Marshall Space Flight Center (MSFC) under the Summer Student Employment Program.

They will be placed throughout the Center in every organizational segment.

The program got underway last week with the hiring of 65 aides from the Summer Student Program Register and 40 youths, 16 to 21 years old, through the Youth Opportunity Program.

The 65 aides, all in the clerical, engineering and acientific categories, are high school and college students who filed applications and took the examination announced by the Civil Service Commission (CSC). The CSC established a register from the examination from which the 65 students were hired.

Under the Youth Opportunity Program, the 40 youths were selected through their high schools and the Alabama State Employment Service. The Marshall Center is authorized to hire up to 175 of these students.

-more-

The Marshall Center has also been authorized 10 excepted appointments for employing summer interns, high school and college faculty. Two positions for high school faculty and three for college faculty have been committed from this authorization.

An orientation session is being planned for the week of June 16 for all the summer employees and their supervisors. The session will be held in Morris Auditorium.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0035
Residence, 205/561-3559

FOR RELEASE:
Upon receipt.
Release No. 75-109

MARSHALL CENTER REQUESTS QUOTATIONS ON SOLAR ARRAY

MARSHALL SPACE FLIGHT CENTER, Ala. -- A request for quotations (RFQ) has been released to business and industry by the NASA-Marshall Space Flight Center (MSFC) for the design, fabrication, testing and delivery of a full scale solar array wing for solar electric propulsion and Space Shuttle payload applications.

Several technology studies have been accomplished in recent years which have defined concepts of lightweight solar arrays which could be used to provide electric propulsion for upper stage, ferry-type vehicles in the Space Transportation System.

The proposed study would bring together all technology developed from these previous studies to establish design requirements for a solar array wing.

The contractor selected will develop techniques for low cost fabrication and testing which will be required for building flight units.

Fabrication and testing will establish dynamic performance and indicate technology readiness for future Space Transportation System programs.

-More- June 6, 1975

Technology development during performance of the contract is expected to reduce greatly the cost per watt of power, reduce the weight and cost of the structure, and increase substantially the lifetime of solar electric propulsion systems.

A pre-proposal conference will be held at the Marshall Center from 8:30 a. m. to noon on June 16 to discuss the proposed work, its application to effort presently being conducted at MSFC and to discuss in a general way what MSFC hopes to accomplish from any resulting contract.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

FOR RELEASE:

Mike Sarr, 205/453-0035
Residence, 205/883-8998

Upon receipt.
Release No. 75-111

MSFC SEEKS BIDS ON BUILDING MODIFICATIONS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) has issued an invitation for bids for modifications to the Inertial and Celestial Sensors Laboratory, building 4487. Bids are due by 1:30 p.m. June 19.

The work, to be completed in 270 days, includes enlarging and modernizing the laboratory and the installation of Government-furnished property.

The modernization under the contract includes the installation of concrete pavements, work on water, sanitary, steam and electric lines, and alterations to the plumbing, heating, air conditioning and ventilation networks in the laboratory.

Prospective bidders should contact Paul McQueen at 205/453-2680 to arrange for surveys of the work site.

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June 6, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:

Upon Receipt
75-112

HEAO-TYPE STAR-TRACKERS WORKING WELL IN SATELLITE

MARSHALL SPACE FLIGHT CENTER, Ala.--Two star-tracker instruments indentical to the ones scheduled for use in the High Energy Astronomy Observatory (HEAO) program are reported functioning very well as part of a recently-launched Small Astronomy Satellite (SAS-C).

The star-trackers are optical electronic devices which lock onto a star and track it to determine its relation to a coordinate system. The information from the star-trackers is used to establish the location and attitude of the observatory in space.

Two of the star-trackers will be carried aboard HEAO-A, the first of three unmanned scientific observatories set for launch into low Earth orbit between 1977 and 1979 to study some of the most intriguing mysteries of the universe--pulsars, black holes, neutron stars and supernovae.

The HEAO program is being managed by the NASA-Marshall Space Flight Center (MSFC) for NASA's Office of Space Science.

The SAS-C currently using the star-trackers is an X-ray measuring satellite (designated Explorer 53 upon attaining orbit) for which the NASA-Goddard Space Flight Center, Greenbelt, Md., is responsible.

The SAS-C was launched by a U.S. Scout rocket from the Italian-operated San Marco platform off the coast of Kenya in Africa.

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June 9, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
June 9, 1975
(Released simultaneously
by NASA Headquarters.)
75-113

APOLLO SOYUZ EXPERIMENT SEEKS IMPROVED MAGNETIC MATERIALS

MARSHALL SPACE FLIGHT CENTER, Ala.,--Materials with permanent magnetism characteristics will be melted and recast as solids during the Apollo Soyuz mission to determine whether such processing in space will improve their magnetic properties. The launching of the two vehicles in the United States-Soviet Apollo Soyuz Test Project (ASTP) is scheduled for July 15.

The study, titled "Processing of Magnets (MA-070)," is one of seven experiments which will be performed by U.S. astronauts using a multipurpose electric furnace developed by NASA's Marshall Space Flight Center.

High coercive strength permanent magnets such as those cast from cobalt and rare-Earth substances are being investigated for advanced technology applications because of recent improvements in their properties. Such applications include anti-gravity levitators for high-speed ground transportation systems, magnetic bearings for flywheels used in energy storage, and in gyros in deep space probes.

Presently, use of permanently magnetic substances, powdered and then cast as permanent magnets, is limited by difficulties in the "sintering" process imposed by Earth's gravity. Sintering procedures result in a powdered substance becoming a solid mass by a complex, carefully controlled heating process in which complete melting does not occur.

-more-

On Earth, the influence of gravity prevents even distribution of the magnetic particles throughout the final solid casting--tending to concentrate them at the bottom of the solid being cast (the portion closest to Earth).

Engineers believe that a single-step operation in weightless space will produce a denser, more homogenous casting than is achieved by a multiple-step process on Earth.

This would produce more efficient permanent magnets and the denser solid would reduce or eliminate degradation of the magnet by oxidation--experienced in the more porous castings produced to date on Earth.

Engineers hope that almost perfect magnetic crystals can be grown in the weightless conditions of space flight.

Principal investigator for the experiment is Dr. David J. Larson of the Grumman Aerospace Corp., Bethpage, N.Y., under contract to the Marshall Center. Monitoring the effort for the Marshall Center is Mrs. Carolyn Griner of the Materials and Processes Laboratory, Science and Engineering Directorate.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Don Worrell, 205/453-0034
Residence, 205/881-0909

FOR RELEASE:
Upon Receipt
75-114

FLIGHT READINESS REVIEW SET FOR SATURN IB/APOLLO

MARSHALL SPACE FLIGHT CENTER, Ala. -- A two-day Flight Readiness Review (FRR) for the Saturn IB/Apollo space vehicle for the upcoming Apollo Soyuz Test Project (ASTP) will begin Thursday, June 12, at the NASA-Kennedy Space Center (KSC).

The Saturn IB launch vehicle, developed under direction of the NASA-Marshall Space Flight Center (MSFC), will carry three U.S. astronauts into orbit July 15 aboard an Apollo spacecraft in history's first international manned space mission, a joint effort with the Soviet Union.

MSFC officials attending the FRR include Dr. William R. Lucas, director; James E. Kingsbury, director, Science and Engineering Directorate; and Ellery B. May, manager, Saturn Program Office.

Prior to the FRR, a Launch Readiness Review (LRR) and a Flight Readiness Test (FRT) had been successfully conducted.

The final major test for the Saturn IB/Apollo is the Countdown Demonstration Test (CDDT), to be conducted early in July. This is a dress rehearsal for the final countdown to launch and is conducted with the vehicle fueled and all systems operating as they will on launch day.

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June 11, 1975
NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
Release No. 75-115

FIRST SPACE SHUTTLE ENGINE IGNITION TEST IS SUCCESS

MARSHALL SPACE FLIGHT CENTER, Ala. -- The first in a series of ignition tests of a Space Shuttle Main Engine has been conducted successfully.

Quick-look evaluation of data from the brief test indicated that all test parameters were satisfactory and the test objective achieved.

Tests are being conducted for the NASA-Marshall Space Flight Center by personnel of the Rocketdyne Division of Rockwell International Corp., developer of the engine.

The tests are being run at the National Space Technology Laboratories in Hancock County, Miss., using facilities designed originally for Saturn testing and converted recently for the Shuttle program.

The recent test is the first of a series of eight ignition tests which will lead up to the mainstage firing of the main engine later this summer. All ignition tests will be of short duration, none reaching full engine thrust.

-more-

June 11, 1975

The test engine passed successfully a countdown demonstration test and two "blowdown" tests earlier. In a blowdown test the liquid hydrogen propellant is used to start spinup of the turbopumps. The next test is tentatively scheduled for June 12.

Completion of the ignition test series is slated for late July. Test data will then be assessed and preparations begun for mainstage firings.

# # #

News from

Rockwell International

Rocketdyne Division
6633 Canoga Avenue
Canoga Park, California 91304
Telex: 651488

FOR IMMEDIATE RELEASE

RD-15

SSME IGNITION TEST IS COMPLETE SUCCESS ROCKETDYNE ANNOUNCES

BAY ST. LOUIS, Miss., June 24, 1975 -- The first ignition test of the main chamber of the Space Shuttle Main Engine (SSME) was successfully conducted by the Rocketdyne Division of Rockwell International Corporation here today.

The test at NASA's National Space Technology Laboratories at Bay St. Louis was the beginning of a series of progressively higher thrust tests. The first full scale engine test is scheduled for later this summer.

Paul N. Fuller, Rocketdyne's resident SSME manager at the Bay St. Louis facility, said all test objectives were achieved in the initial firing.

The engine has been undergoing an extensive series of checks since its arrival at Bay St. Louis in March. Before the main chamber test firing, six tests were held, including ignition of the spark igniters and two preburners.

-more-

The SSME is being developed for NASA's Marshall Space Flight Center by Rocketdyne. It is the most advanced liquid-fueled rocket engine ever built and the first to use an electronic digital computer for control of all its functions.

The engines, three of which will be used on each space shuttle orbiter, develop a thrust of 470,000 lbs. each. With a normal mission burn time of eight minutes and an estimated lifetime of 7½ hours, the engine is designed to be reused up to 55 times between overhauls.

Rockwell International is a major multi-industry company applying advanced technology to a wide range of products in its aerospace, automotive, consumer, electronics and industrial operations.

# # #

Phone: E. F. Hogan
(213) 884-2213

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

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FOR RELEASE:
Upon Receipt
Release No. 75-116

NASHVILLE FIRM GETS SPACE SHUTTLE CONTRACT

MARSHALL SPACE FLIGHT CENTER, Ala. -- A $3.2 million contract has been awarded to Avco Corporation's Aerostructures Division at Nashville, Tenn., for work on NASA's Space Shuttle.

The contract was awarded by the Martin Marietta Aerospace Corporation, New Orleans, prime contractor to the NASA-Marshall Space Flight Center for the Shuttle's External Tank.

The disposable External Tank, 47 meters (153.68 feet) long and 8.4 meters (27.58 feet) in diameter, will carry the liquid propellants which the Space Shuttle's three main engines will burn from launch to near orbit.

Avco will manufacture the intertank section which will provide support between the liquid oxygen tank and the larger liquid hydrogen tank. The section is 6.86 meters (22.5 feet) long and will be made essentially of aluminum.

-more-

June 11, 1975

The Shuttle Orbiter will ride "piggyback" on the tank at launch. Two Solid Rocket Boosters will also be attached to the tank, one on each side. The solid rockets will drop away at burnout at an altitude of about 42.7 kilometers (26.5 miles) and return to Earth by parachute for recovery and reuse.

The External Tank will remain attached to the Orbiter until the two units reach a point just short of orbital velocity. The tank will then be jettisoned and permitted to reenter the atmosphere at a pre-designated area of the ocean.

Work is slated to begin this year on 10 intertank units which are to be delivered through 1978. The first Shuttle flight is slated for launch in 1979 from the NASA-Kennedy Space Center.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 118

MSFC HOLDS AMPS BRIEFING FOR INDUSTRY

MARSHALL SPACE FLIGHT CENTER, Ala. -- A briefing for industry on the Atmospheric, Magnetospheric and Plasmas in Space (AMPS) project is being conducted at the NASA-Marshall Space Flight Center today.

Rein Ise, Task Team manager, is conducting the briefing which runs from 9 a.m. to 1 p. m. in Morris Auditorium, MSFC Headquarters building.

Requests for proposals for definition of the AMPS payload are to be issued by the Marshall Center in the near future.

The briefing is designed to pass on to industry as much information as possible on the AMPS payload and to orient industry on the program's purpose and scope.

AMPS is being planned as a payload for NASA's Space Shuttle which is scheduled to become operational by 1980. The AMPS is to be a manned scientific space laboratory for studying the near-space environment of Earth and how changes in incident solar energy and emission from Earth affect it.

# # #

June 12, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Don Worrell, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No. 75-119

APOLLO SOYUZ FLIGHT READINESS REVIEW IS HELD

MARSHALL SPACE FLIGHT CENTER, Ala. -- Another milestone in preparations for the launch of the Apollo Soyuz Test Project on Tuesday, July 15, was passed Thursday with the completion of the Flight Readiness Review.

"As of now," said Chester M. Lee, ASTP Program Director, NASA Headquarters, "ASTP is on schedule and 'go' for launch on July 15."

The day-long review's successful completion cleared the way to begin loading of hypergolic propellants aboard the Apollo spacecraft atop its Saturn IB rocket at KSC's Launch Complex 39.

According to Lee, an assessment of all aspects of flight preparations was made by top NASA management. "All our problems were reviewed and closed out," said Lee.

The Flight Readiness Review was attended by Dr. George Low, NASA Deputy Administrator, and top NASA management from NASA Headquarters and all NASA field centers involved in manned space flight, including Director William R. Lucas of the Marshall Space Flight Center.

-more-

The next major test awaiting the Apollo Soyuz Test Project launch team is the Countdown Demonstration Test, scheduled to begin on June 25 and continue through July 3.

The CDDT is a full-scale dress rehearsal for launch. A simulated ignition with the Saturn IB rocket fueled is scheduled for 3:50 p.m. on July 2.

The terminal portion of the countdown will be repeated on the following day with the rocket unfueled and the prime crew participating.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
Release No. 75-121

INDUSTRY INVITED TO SOLAR ENERGY BRIEFINGS BY MARSHALL CENTER

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center will conduct industry briefings June 24 and 26 on its role in the Energy Research and Development Administration's (ERDA) Solar Heating and Cooling Demonstration Program.

The June 24 briefing will be held at the Concert Hall, Von Braun Civic Center, Huntsville, Ala., and the June 26 meeting at the Crystal Ballroom, Hacienda Hotel, El Segundo, Calif. Registration will begin at 7:30 a.m. and the briefing at 9 a.m. at each location.

ERDA has assigned to NASA a major development role in the program. Under the assignment, the Marshall Center will be responsible for management of the development program in support of the Solar Heating and Cooling Demonstration effort. ERDA will retain overall management responsibility throughout the program.

-more-

June 16, 1975

MSFC plans to release requests for proposals (RFPs) during July for five initial efforts. They are:

System Development: Design, develop, manufacture, test and deliver prototype solar heating systems and combined solar heating and cooling systems for operational testing. These will be for single and multiple family residential and commercial applications.

System development of available subsystems: Test and evaluation of available subsystems to be furnished by the government and the integration of the subsystems into deliverable solar heating systems and combined solar heating and cooling systems for operational testing.

Additional development of proposed systems: For procurement of existing solar heating systems, combined heating and cooling systems, and hot water systems which require more development for meeting the desired performance criteria and related specifications.

Additional development of proposed subsystems: For procurement of existing solar heating subsystems, combined heating-cooling subsystems and hot water subsystems which require additional development effort.

Available subsystems: Procurement of available solar heating subsystems, combined heating-cooling subsystems and hot water subsystems.

The briefings will be open to the public. Firms interested in attending should write to: K. D. Sowell, AP32, George C. Marshall Space Flight Center, Marshall Space Flight Center, Ala. 35812.

Sowell can also be contacted by teletype at Telex terminal 0594416.

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NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Mike Sarr, 205/453-0034
Residence, 205/883-8998

FOR RELEASE:
Upon Receipt
Release No. 75-123

MSFC CONTRACTS AWARDED IN MAY ANNOUNCED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) during May awarded the following contracts of $25,000 or more:

ALABAMA

Auburn -- Auburn University (two contracts), $27,947, additional funds for a space vehicle control study and $33,226, additional funds for a study of control problems for large space vehicles.

Birmingham -- Ingalls Iron Works Co., $26,792 for carbon steel for Solid Rocket Booster (SRB) structural tests; O'Neal Steel, Inc., $28,203 for carbon steel also for SRB structural tests; Sound Engineering Service Co., Inc., $32,040 for 89 amplifiers.

Dauphin Island -- Marine Environmental Sciences Consortium, $25,000 for a "ground truth" workshop and for inputs to a data analysis system at the Marshall Space Flight Center.

-more-

June 17, 1975

Dothan -- General Services, Inc., $116,000 for refuse collection services at MSFC and Sentinel Protective Services, $652,208 for security services for MSFC.

Huntsville -- Boeing Co., two contracts totaling $106,866 for two Space Shuttle studies; Brown Engineering Co. (three contracts), $50,000 for engineering support services through June 13, $835,000 for engineering support services through July 25 and $73,722 for a data base management study; Computer Services Corp., $438,342 for computational support services through May 31 and General Electric Co. (two contracts), $389,339 for a study to establish models and simulations for data systems, and $490,826 for the closeout of the Launch Vehicle Ground Support Equipment (Saturn Launch Vehicles)/Apollo Soyuz Test Project (ASTP) contract.

General Products Co., $28,175 for three pieces of hardware and installation for a Space Tug simulation demonstration; Goodrum Associates, Inc., $69,000 for editorial services in connection with NASA special publications on the Skylab program; Hayes International Corp. (two contracts), $414,359 and $286,000 for general support services to the MSFC Management Services Office (MSO).

IBM Corp., $60,816 in additional funds for the Space Ultra-Reliable Modular Computer operating system and Lockheed Missiles & Space Co., Inc. (two contracts), $60,000 for a Space Shuttle study and $242,640 for the conceptual design of a biological specimen holding facility for Spacelab.

Huntsville (cont'd)

Management Services, Inc. (three contracts), $98,000 for the operation and maintenance of government-owned aircraft through May 27, $298,995 for general support services through May 31 and $810,162 for the operation and maintenance of four government-owned aircraft at MSFC and one at Langley Research Center; McAlister & McQuinn Construction Co., Inc. (two contracts), $62,000 for modification to the Space Sciences Laboratory, building 4481, and $53,792 to install an aircraft fueling facility and to pave an aircraft parking area at the Redstone Airfield; and Northrop Services, Inc., $325,000 for mission support services through July 16.

Planning Research Corp., $350,000 for engineering support services through July 31; SAI Comsystems Corp., $314,809 for a Smart Terminal System (a digital computer with software); Sperry Rand Corp., $917,000 for engineering support services through July 31; Superior Technical Services $108,900 for preparation of reproducible manuscripts and documents for the Technical Publications Div., MSO, MSFC; and Wyle Laboratories, Inc., $29,595 for a development of vibration test criteria for qualifying space vehicle components.

Redstone Arsenal -- U. S. Army Missile Command, $49,000 for Redstone Scientific Information Center services.

-more-

Tuscaloosa -- University of Alabama, $25,000 for a Space Shuttle study.

CALIFORNIA

Anaheim -- California Computer Products, Inc., $370,200 for hardware for the UNIVAC 1108 Computer System at MSFC and installation, training and one-year maintenance for the system.

Canoga Park -- Rockwell International, Rocketdyne Div., four contracts totaling $1,539,569 in amendments and increases for the Space Shuttle Main Engine (SSME) and $553,129, an increase in funds for modifications to the Coca 1A and 1B test stands.

Huntington Beach -- McDonnell Douglas Corp. (two contracts), $71,837 for a Space Shuttle External Tank (ET) study and $177,360 for the conceptual design of a biological specimen holding facility for the Spacelab.

LaJolla -- University of California, $37,935 in additional funds for quality and acceptance test equipment.

Los Angeles -- Aerospace Corp., $61,380 for data analysis of Skylab Apollo Telescope Mount experiment No. SO-56 and Hughes Aircraft Corp., $75,000 for a Space Transportation System (STS)/Space Shuttle study.

Palo Alto -- Lockheed Missiles & Space Co., Palo Alto Research Laboratory, $49,965 to develop new methods of measuring cold plasmas in space.

-more-

Redwood City -- Ampex Corp., $78,912 for maintenance and repair services on government-owned Ampex equipment at MSFC.

San Diego -- General Dynamics Corp., Convair Aerospace Div., $128,000 to extend a Space Shuttle payload data study.

Torrance -- Garrett Corp., Airesearch Div., $73,485 for a study of man/system design requirements for weightless environments and $55,037 for a Spacelab study.

COLORADO

Denver -- Martin Marietta Corp. (four contracts), $160,000 for Skylab systems engineering and integration through June 30, $57,886 for a study of the Space Transportation System (STS) payload environment, $49,300 for a Space Shuttle system analysis and $39,710 for expansion and improvement of a computer system for use with large Space Shuttle structural models.

FLORIDA

Fort Lauderdale -- Harris Corp., Computer Systems Div., $47,200 for an input/output controller.

Orlando -- Martin Marietta Corp. ($35,000) a removal of excess funds for 37 Skylab gyroscope processors and one module test set.

LOUISIANA

Baton Rouge -- Louisiana State University, $25,000 for a time dependent flow field model for Mobile Bay.

New Orleans -- Barriere Construction Co., $49,945 for roadway and parking lot repair at the Slidell Computer Complex and Martin Marietta Corp. (four contracts), $45,000 a decrease in funds for the pneumatic test facility at Michoud Assembly Facility (MAF) for the Space Shuttle External Tank (ET), $92,200 for additional facilities for ET, $500,000 for the tank farm modification facility for the ET and $29,000 for the thermal protection facility for the ET.

MARYLAND

Bethesda -- Ampex Corp., Memory Production Div., $55,776 for the rental of two magnetic core memory systems for use in the UNIVAC 1108 unit processor.

Gaithersburg -- IBM Corp. (two contracts), $463,383 an increase in funds for instrument units for the ASTP and $1,327,000 for instrument units for the ASTP and Watkins-Johnson Co., $43,535 for a receiving system for use in the radio measurement spectrum.

Silver Springs -- Naval Surface Weapons Center, $240,000 for a Space Shuttle range safety system analysis and verification.

MASSACHUSETTS

Cambridge -- American Science and Engineering (two contracts), $284,000 in funding through June 30 for High Energy Astronomy Observatory (HEAO) experiment hardware and $263,000 a decrease in funds for HEAO

mission B, X-Ray telescope experiment; Arthur D. Little, Inc., $59,979 for a study of processing silicon in a weightless environment; Harvard College (two contracts), $188,964 for scientific data reduction and data analysis of ATM experiment No. S-054 of Skylab and $61,000 in funding through June 30 for an ATM experiment for Skylab and Raytheon Co., $98,000 in additional funds for the Clear Air Turbulence detection system.

NEVADA

Reno -- University of Nevada, $48,998 for a Space Shuttle payload study.

NEW JERSEY

Teterboro -- Bendix Corp., $238,977 in additional funds for cathode ray tube multifunction display systems and two test sets for the Data Systems Laboratory at MSFC.

NEW YORK

Albany -- University of New York, $27,498 for a computer program.

Bethpage -- Grumman Aerospace Corp., $30,000, additional funds for an Operation Planning Simulation Model.

East Aurora -- Moog, Inc., $28,714 for a servoactuator refurbishment for Solid Rocket Motor (SRM) ground development testing.

New York -- R. H. Pines Corp., $49,137 for 25 items of carbon steel for the SRB structural tests.

OHIO

Columbus -- Battelle Memorial Institute (two contracts), $38,997 for a space processing study and $200,000 for a Space Tug study.

PENNSYLVANIA

Newtown -- Aydin Corp., Vector Div., $37,925 for a modified version multiplexer (Vector model FMT711) for Solid Rocket Boosters.

Pittsburgh -- Westinghouse Electric Corp., Astronuclear Laboratory, $62,300 to manufacture and assemble cartridge thermal assemblies for ASTP experiment MA-010.

TENNESSEE

Nashville -- Fisk University, $25,300 for a study of properties of scattering amplitudes at very high energies and Tennessee State University, $59,963 for a study of applications of acoustic emission to space flight hardware.

UTAH

Brigham City -- Thiokol Corp. (four contracts), $1,455,000 in additional funds for the Solid Rocket Motor (SRM), $64,931 a decrease in funds for the Space Shuttle SRM and two contracts for a total of $1,649,113 in funds for facilities in support of the SRM.

WASHINGTON

Redmond -- Sunstrand Data Control, Inc., $52,548 for hardware for the Test Laboratory at the Marshall Center for use in the External Tank project.

WASHINGTON, D. C.

Naval Research Laboratory (two contracts), $72,000 in additional funds for analysis of the S-201 experiment of the Skylab 4 and Apollo 16 missions and $175,000 in funds through Aug. 1 for ATM experiments SO82A and SO82B and Sperry Rand Corp., UNIVAC Div., $198,404 for maintenance of the government-owned UNIVAC 1108 multiprocessor computing system.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:

Upon Receipt
75-124

MARSHALL CENTER STUDIES SIX BIDS FOR SUPPORT SERVICES

MARSHALL SPACE FLIGHT CENTER, Ala.--The NASA-Marshall Space Flight Center has received proposals from six aerospace firms on a proposed cost-plus-award-fee contract for institutional support services.

Firms submitting proposals were: Hayes International Corp., the current contractor; Kentron Hawaii, Ltd.; Boeing Services International, Inc.; Federal Electric Corp.: RCA Service Co.; and General Electric/ Management and Technical Services Co.

The proposed contract will provide support by industry to the Marshall Center for telecommunications services, documentation repository services, and graphics, models and exhibits services for one year with an option to extend the contract for two additional one-year periods.

The proposals are being evaluated by a Source Evaluation Board.

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June 18, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-125

SPACE PROCESSING EQUIPMENT BEING STUDIED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center has issued two contracts for parallel studies on space processing equipment for use on Spacelab and Space Shuttle missions.

A contract for $299,981 was awarded to TRW Systems Group, Redondo Beach, Calif., and one for $284,974 to General Electric Co., Space Division, Philadelphia, Pa.

Purpose of the studies is to provide the preliminary designs for equipment which could be used for processing various materials, such as metals and crystals, in the weightlessness of space.

The studies are to be completed in eight months.

# # #

June 18, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
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FOR RELEASE:

Upon Receipt
Release No. 75-127

ENGINEERING STUDENTS STUDY AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- Six outstanding engineering students are spending this summer at the NASA-Marshall Space Flight Center (MSFC) under fellowship grants awarded in the NASA/National Aerospace Fellowship Program.

The students are Barbara Luckett and Fernando de la Fuente, University of Texas at El Paso; George Simms and Andy Carey, Southern University, Scotlandville, La., and Sherion McDaniel and Riley Henderson III, Tuskegee (Ala.) Institute.

They are among 50 students from 17 universities participating in the program along with nine NASA field installations.

Training grants are awarded to the universities and it is their responsibility to select the participating students. The stipend for each student selected is $2500 per academic year to be used for tuition, fees, books and other educational costs. Also, for each student selected, the university has $1000 made available to it to assist it in improving its capabilities in space-related science and engineering.

-more-

June 19, 1975

The students must have completed two years of academic study and rank in the upper third of their class. Expected to work two summers at a NASA field installation, the students are paid the prescribed rate for summer interns.

This is the second year for the program which was established "to encourage members of minority groups to undertake professional careers in scientific and engineering fields, so that the supply of highly trained persons in space-related science and technology will be more representative of the population of the United States, and thereby provide NASA with future needed employees."

Last year, 20 students and seven universities participated in the program.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-128

MSFC NEGOTIATING FOR MAINTENANCE SUPPORT

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) has selected Metro Contract Services, Inc., Houston, Texas, and Management Services, Inc., Huntsville, Ala., for competitive negotiations leading to award of a single contract for base maintenance support services.

Negotiations with each firm will begin in the near future to determine the contractor to furnish base maintenance support in the following areas: Vehicle support; minor alterations, repair and maintenance; materials handling; operation and maintenance of specialized equipment; facilities engineering design; and grounds maintenance.

The contract will run for one year beginning Aug. 1, 1975, with options for two additional one-year periods.

This procurement is a set-aside for participation by qualified small business concerns. Proposals were also received from Process Operators, Inc., of Houston and Engineered Maintenance Services, Huntsville.

# # #

June 19, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Curtis Hunt, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-129

DATES OF INDUSTRY BRIEFINGS ON SOLAR ENERGY CHANGED

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) today announced a postponement of the industry briefings planned in Huntsville and the Los Angeles area concerning solar energy work assigned by the Energy Research and Development Administration (ERDA).

Briefings had been planned June 24 at the von Braun Civic Center, Huntsville, and June 26 at the Hacienda Hotel, El Segundo, to explain to interested firms the proposed research and development activity involved in Solar Heating and Cooling development which ERDA has asked NASA to carry out.

The new dates for the briefings are: Huntsville, July 1 and El Segundo, July 8. The locations and the starting times (registration, 7:30 a.m., program, 9 a.m.) are unchanged.

MSFC delayed the briefings to allow for additional study of the work requirements and planned management approach within NASA.

# # #

June 19, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No: 75-130

SOLAR HEATING AND COOLING TASK TEAM FORMED AT MSFC

MARSHALL SPACE FLIGHT CENTER, Ala. -- The NASA-Marshall Space Flight Center (MSFC) has established a Solar Heating and Cooling Task Team to accomplish tasks assigned by the Energy Research and Development Administration (ERDA).

Dr. William R. Lucas, MSFC director, named Donald R. Bowden as manager of the team. The new group is part of the Advanced Projects Office of the Program Development directorate at MSFC.

MSFC was recently assigned a significant role in support of the ERDA National Plan for Solar Heating and Cooling. The new task team will be the focal point within MSFC for management of center efforts in this activity.

The task team will direct a development program in support of demonstration of systems and subsystems for heating and cooling applications using solar energy.

The team will also direct the acquisition of available solar heating and cooling systems and subsystems and additional development of these with a view to increasing efficiency and lowering costs.

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-more-

June 20, 1975

ERDA has authorized approximately $50 million to the Marshall Center for work during the next five years. Some 100 persons will be involved in the program at MSFC.

The Solar Heating and Cooling Task Team is quartered temporarily in building 4202 at the Marshall Center. Telephone numbers are 205/453-1248 and 453-1298.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Guy Jackson, 205/453-0034
Residence, 205/586-4647

FOR RELEASE:

Upon Receipt
Release No. 75-131

MARSHALL CENTER TO OBSERVE 15th ANNIVERSARY JULY 1

MARSHALL SPACE FLIGHT CENTER, Ala. -- Tuesday, July 1, will be the 15th anniversary of the establishment of NASA's George C. Marshall Space Flight Center in Huntsville, Ala.

The birthday will be marked by business as usual, for the most part, as the Marshall Center begins its 16th year on the first day of a new fiscal year. Although proud of their heritage and achievements, employees, led by Director William R. Lucas, are more concerned with challenges facing them today. And they want these projects to be completed with the same measure of success which has been the Marshall Center's hallmark in the past.

On July 1 the Countdown Demonstration Test will be underway at the Kennedy Space Center on the last Saturn vehicle scheduled for launch. At the end of the real countdown on July 15, the Saturn IB, known to Marshall employees as SA-210, will lift three American astronauts to Earth orbit for the first international rendezvous and docking in space.

-more-

June 24, 1975

As the last Saturn leaves the launch pad, more than 50 per cent of the Marshall Center employees are heavily involved in the Space Shuttle program, which will usher in the next phase of manned space flight in 1979. Other employees are working on a variety of programs which include the Space Tug, Spacelab, payloads for the Shuttle, and other projects. Some of these projects will continue to unravel the mysteries of deep space, while others make down-to-Earth applications of new knowledge. The Solar Heating and Cooling Task Team, for instance, is working with the New Energy Research and Development Administration to make economical use of the Sun's bounteous energy for both heating and air conditioning of residences and commercial buildings.

Some notable highlights of the Marshall Center's past 15 years can be recalled during a brief pause for retrospection.

The Center was created almost full blown, and busily at work on several space projects, when buildings, facilities and about 4200 employees were transferred in place to NASA from the U. S. Army Ballistic Missile Agency.

The first NASA employee here was David H. Newby, who retired recently as head of the Administration and Program Support Directorate. After the National Aeronautics and Space Administration was formed on Oct. 1, 1958, Newby became its liaison officer in Huntsville with the U. S. Army long before the Marshall Center was formed. He played a vital role in effecting the transfer and helping to shape the new organization.

Although some others, like Newby, have retired, of the 4,200 employees who were on duty July 1, 1960, when the Marshall Center was officially established, 1,460 are still on the job.

Seventy-four current employees joined NASA beforehand to help establish the Marshall Center. Cecil S. Little of the Facilities Office and Arthur E. Sanderson, director of Equal Employment Opportunity, have March 20, 1960, as their date of transfer. They were followed a week later by Mildred B. Bobo of Logistics Office and Daryl D. Firestone, Harold T. Minney and Forrest E. Suns, all of Procurement Office. Six more still here transferred in April, 26 in May and 35 in June.

On the morning of July 1, 1960, a ceremony was held on the lawn in front of building 4488, the headquarters of ABMA, to mark the transfer. Brig. Gen. Richard M. Hurst, ABMA's commanding general, feelingly expressed the Army's reluctance at losing the team led by Dr. Wernher von Braun which had launched America's first satellite, Explorer I, but wished them Godspeed on their new assignment.

About two months later, on Sept. 8, President Dwight D. Eisenhower came to Huntsville for the official dedication of MSFC. He and Mrs. George C. Marshall unveiled a statue of the soldier-statesman and Nobel Peace Prize winner for whom the center was named.

A modified Redstone missile, in the famous Jupiter C configuration, with three solid rocket upper stages, had been used to launch Explorer I. And it was the Redstone which placed America's first man in space as

Alan Shepard, in May,1961, followed shortly by Gus Grissom, made brief sub-orbital flights down the Atlantic Missile Range from Cape Canaveral.

The Saturn project, begun in 1958, was the major project transferred from the U. S. Army to NASA when the Marshall Center was formed. It began as a test program to provide greater thrust by clustering Redstone and Jupiter tanks for propellants to feed eight Jupiter engines. The frequent rumble of their static firings in Huntsville was proof that the concept worked.

Ten Saturn I launch vehicles were flown in research and development tests, with the last three, as a bonus, orbiting giant wingspread Pegasus satellites for meteoroid detection.

With the addition of a more powerful upper stage, the Saturn I became the Saturn IB. The development of the still more powerful, three-stage Saturn V began after President John F. Kennedy on May 25, 1961, set the national goal of putting man on the Moon and returning him safely to Earth before the end of the decade of the Sixties.

The first Saturn stages were built and static fired at the Marshall Center, then taken by barge down the Tennessee, Ohio and Mississippi Rivers to Florida for launching. As the program expanded, however, additional manufacturing and testing facilities were needed, and a vast industrial complex was established. The Michoud Assembly Facility at New Orleans was acquired for fabrication of Saturn stages and a testing site

was established nearby in Hancock County, Miss.

The Chrysler Corporation built booster stages for the Saturn IB at Michoud, and The Boeing Company built booster stages for the Saturn V there. Rockwell International built second stages for the Saturn V, as well as the Apollo spacecraft, on the West Coast. McDonnell Douglas Astronautics Company made S-IVB stages -- used as second stage on the Saturn IB and as third stage on the Saturn V -- at Huntington Beach, Calif.

Rocketdyne produced engines for all the Saturns -- the H-1, J-2 and F-1 engines -- at Canoga Park and tested them at Santa Susana. And IBM built the instrument units at Huntsville.

At the peak of the effort more than 100,000 employees in 12,000 industrial firms across the nation were contributing to the Saturn Program. From all points components of the big rockets came together, on schedule and meeting specifications, to form vehicles which, in every launch, have performed their mission. The name Saturn has become synonymous with success.

Development of the capability for effective management of huge research and development programs is in itself one of the major achievements in NASA's space programs.

During the Apollo Program, the Saturn IB was used for testing of the Apollo Spacecraft in Earth orbit. Ten Saturn Vs performed almost flawlessly, allowing 12 astronauts to walk on the Moon, set up experiments, and bring back lunar rocks which will be the object of scientific studies for years to come.

The final three Apollo crews were given increased mobility on the lunar surface through another MSFC development, the Lunar Roving Vehicle, which could carry two astronauts several miles from their landing site across the rugged terrain of the Moon.

On the heels of the Apollo Program came the Skylab Space Station. Here the Marshall Center provided the two-stage Saturn V which placed the Skylab into orbit and three Saturn IBs to carry the crews aloft. In addition, MSFC supplied the workshop itself, the solar observatory instruments, the docking adapter and many of the experiments. Three different crews occupied Skylab for a total of 171 days in space. They performed more than 100 experiments in solar astronomy, Earth resources, bio-medical and other areas.

The Marshall Center has had four directors since its inception, each dedicated to achieving the Center's assigned tasks in creditable fashion. Dr. Wernher von Braun, director for the first ten years of its existence, was followed by Dr. Eberhard Rees, a long-time associate in rocketry. Next came Dr. Rocco A. Petrone, who had been in the rocket program since Army days in the early 1950s. Dr. William R. Lucas, who has held successively more responsible positions in the Army's rocketry program and in the Marshall Center since it was formed, became director in 1974.

In a 15th anniversary message Dr. Lucas told employees: "I doubt if even the most hopeful and determined of us could have foreseen the full extent of the Marshall Center's achievements that would occur in its first 15 years...

"It is my firm conviction that the space program will continue at the leading edge of technology, and that it will play a vital role in shaping the world of tomorrow.

"It is my further conviction that the Marshall Space Flight Center will continue to receive assignments fully as challenging and as important as those in the past 15 years -- and that we will perform those tasks with an effort equally as diligent, dedicated and successful."

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
Residence, 205/852-1763

FOR RELEASE:
Upon Receipt
Release No. 75-132

MARSHALL AWARDS THREE CONTRACTS, MODIFIES ANOTHER

MARSHALL SPACE FLIGHT CENTER, Ala., -- The NASA-Marshall Space Flight Center (MSFC) has awarded three new contracts and modified an existing pact for a total of $1,349,159.

The largest contract, for $950,000, went to the President and Fellows of Harvard College, Cambridge, Mass., for continuation of data analysis in the S055 Ultraviolet Scanning Polychromator Spectroheliometer, a solar physics experiment conducted during the Skylab mission.

Martin Marietta Corp., Denver, received two contracts, one in the amount of $194,159 for a "Payload/Orbiter Contamination Control Requirement Study" in the Space Shuttle Program, and the other for $145,000 for a nine-month study on docking a Space Tug with unmanned spacecraft.

A $60,000 modification was made to a contract held by General Dynamics Corp., Convair Aerospace Div., San Diego, to procure a Bosch carbon dioxide reduction system.

# # #

June 24, 1975

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Curtis Hunt, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-133

June 25, 1975 ?
(MSFC Public Affairs Office Telecon 1 April 77)

STUDY CONTRACTS LET FOR SPACELAB EXPERIMENT FACILITY

MARSHALL SPACE FLIGHT CENTER, Ala., -- The NASA-Marshall Space Flight Center has issued two contracts for parallel conceptual design studies of a biological holding facility for Spacelab.

The contracts for the nine-month studies were $242,640 to the Lockheed Missiles and Space Co. and $177,360 to the McDonnell Douglas Astronautics Co. Requests for proposals were issued to 39 firms.

The studies are expected to result in the conceptual design of habitats to be carried in Spacelab to house and maintain live biological specimens to support Life Sciences space flight research programs.

The habitats are to be suitable for a wide variety of specimens but the emphasis will be on the adult rhesus monkey and the adult laboratory rat. The recommended concept will include a design for both restrained and unrestrained specimens.

Basically, the habitat will consist of the structure and the environmental control, food and watering, waste management, lighting and specimen instrumentation systems.

The habitats will be designed to interface physically and environmentally with the Spacelab. The studies will consider the use of standard Spacelab racks and mounting facilities.

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The Spacelab, capable of accommodating many different scientific disciplines, is a pressurized laboratory, with pallets which are exposed to the space environment, being built under the direction of the European Space Agency for use on Space Shuttle flights. The reusable Spacelab will be carried to and from Earth orbit in the cargo bay of the Shuttle Orbiter.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
Upon Receipt
Release No. 75-134

SPACE SHUTTLE ENGINE MAIN CHAMBER IGNITION TEST PERFORMED

MARSHALL SPACE FLIGHT CENTER, Ala. -- A major milestone in the Space Shuttle program was reached yesterday (June 24) with the main chamber ignition test firing of the first Space Shuttle Main Engine (SSME) at NASA's National Space Technology Laboratories (NSTL), Hancock County, Miss.

Quick-look evaluation of data from the brief test--approximately one second--indicated that all test parameters were satisfactory and all test objectives were successfully achieved. The test marked the beginning of a planned sequence of progressively higher thrust levels for the engine.

Yesterday's firing was conducted for the NASA-Marshall Space Flight Center (MSFC) by personnel of the Rocketdyne Division of Rockwell International Corp., prime contractor to MSFC for development of the SSME.

The test was the seventh in a planned series of 10 to 15 short-duration ignition tests which will culminate in an engine operation at about 20 per cent of rated thrust level (470,000 pounds). After completion of ignition tests, subsequent tests will be targeted for higher mainstage thrust levels to

evaluate engine starting characteristics and performance.

Maximum speed attained on the engine's high-pressure fuel pump was slightly less than 7,000 rpm. (About 37,000 rpm is full-power-level condition.)

The first SSME, which is known as the Integrated Subsystem Test Bed (ISTB), is installed in Test Stand A-1 at NSTL. The tests use facilities designed originally for Saturn testing and converted for the Shuttle program.

The SSME is the most advanced liquid-fueled rocket engine ever built and is the first engine to use an electronic digital computer for automatic control for all engine functions. Three of these engines will power the Orbiter stage of the Space Shuttle vehicle scheduled for operation in the 1980's.

The high-pressure liquid oxygen-liquid hydrogen engine is designed for re-use up to 55 times between overhauls. Its normal mission burn time is eight minutes and it has a lifetime of 7.5 hours.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
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FOR RELEASE:

Upon Receipt
Release No. 75-136

MSFC GETS SIGNIFICANT ROLE IN NASA/ERDA AGREEMENT

MARSHALL SPACE FLIGHT CENTER, Ala. -- A significant role has been assigned to the NASA-Marshall Space Flight Center (MSFC) in near-term development for the demonstration program of the Energy Research and Development Administration's (ERDA) National Plan for Solar Heating and Cooling.

This assignment is the result of an interagency cooperative agreement recently signed by Dr. James C. Fletcher, administrator of the National Aeronautics and Space Administration, and Dr. Robert C. Seamans Jr., administrator of ERDA. The agreement, outlining NASA's role in support of the National Energy Program, represents months of planning by the two agencies and the beginning of a concentrated effort to solve the nation's energy problems.

MSFC will direct a development program in support of ERDA's Solar Heating and Cooling Demonstration activities leading to the early, wide-spread, practical application of solar energy for heating and cooling

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June 26, 1975

of buildings, both residential and commercial.

The scope of the planned effort at MSFC in support of ERDA during the next five years is expected to be over $50 million. Center officials estimate that about 100 persons may be involved in the program.

ERDA is charged by law with the responsibility for planning, coordinating and prosecuting a vigorous national program in energy research and development. In carrying out this responsibility, ERDA has announced its intentions to seek to use the nation's most capable scientific, engineering and management resources in the private, public and university sectors of the economy.

NASA, with its highly competent engineering and scientific personnel and sophisticated research facilities which are adaptable to research in energy fields, will provide an important base of capability for supporting the national program. It will perform basic and applied research and technology at selected NASA centers in specified disciplines and technologies.

The Marshall Center's expertise in applications of solar energy in the Apollo and Skylab programs make it ideally suited to the development requirements of the Solar Heating and Cooling Demonstration program.

A Task Team has been organized within the Program Development Directorate at MSFC, and Dr. William R. Lucas, center director, has appointed Donald R. Bowden as the manager of the team.

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A Program Plan for the development phase of the Solar Heating and Cooling Demonstration has been developed by the Task Team and this plan has already been approved by ERDA. MSFC has scheduled industry briefings in Huntsville, Ala., on July 1 and in El Segundo, Calif., on July 8 in preparation for issuance of Request for Proposals for contractual participation.

Under the recently signed agreement, ERDA may call upon NASA for technical and administrative expertise on both a short- and long-term basis for assistance with ERDA's extensive management arrangements with high technology institutions in the private sector. These arrangements would include technical review boards, evaluation groups and other assessment techniques.

Most program and project activities undertaken by NASA for ERDA under the agreement will involve contractual arrangements with non-governmental institutions. Such arrangements will be conducted under NASA policy, regulations and procedures, except when in conflict with ERDA statutory requirements.

# # #

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center,
Ala. 35812

Christine Duncan, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No. 138-A

NOTE TO EDITORS

In reference to our news release No. 75-138 dated June 27, 1975, concerning a public briefing on the Marshall Space Flight Center's Solar Heating and Cooling Program at the Von Braun Civic Center beginning at 9 a.m. July 1, you are cordially invited to attend.

A special section in the Concert Hall will be reserved for representatives of the media and MSFC's Public Affairs Office will have a representative on hand to arrange interviews and assist media representatives in any way possible.

Guy B. Jackson
Chief, Public Information Branch
Public Affairs Office

June 30, 1975

NASA—MSFC

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Marshall Space Flight Center, Ala. 35812

Christine Duncan, 205/453-0034
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FOR RELEASE:
Upon Receipt
Release No. 75-138

MSFC ISSUES INVITATIONS TO SOLAR HEATING AND COOLING BRIEFING

MARSHALL SPACE FLIGHT CENTER, Ala.,--Invitations have been issued by the NASA-Marshall Space Flight Center (MSFC) to more than 700 business and industrial firms throughout the United States to attend non-technical briefings on the Solar Heating and Cooling Program recently assigned to NASA by the Energy Research and Development Administration.

The first public briefing, to be held July 1 in Concert Hall at the Von Braun Civic Center in Huntsville, Ala., will be to inform interested parties of the nature and plans of the program and to describe the requirements for five Requests for Proposals which are planned to be issued by MSFC during July.

Due to widespread interest which has been indicated in responses to the letters of invitation and telephone calls and letters from local firms, as well as private citizens, the briefing will be open to everyone who has an interest in what MSFC is doing in this vital area, with a special invitation to heating and cooling manufacturers and dealers, realtors, and building, construction, banking and financial firms.

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June 27, 1975

As the initial step in a program which has a goal of demonstrating solar heating and cooling systems to the general public within five years, contracts are planned to be awarded for the procurement of prototype solar heating and cooling systems for single and multiple family residences and commercial buildings.

These contracts will be with many small companies as well as the companies who presently supply conventional heating and cooling equipment.

The briefing in Concert Hall at the Von Braun Civic Center will begin at 9 a.m. Tuesday, July 1. There will be no charge for admission.

# # #